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GREENBELT, MARYLAND, U.S.A. 20771 PROJECT OPERATIONS BRANCH, CODE 513 GODDARD SPACE FLIGHT CENTER

SATELLITE SITUATION REPORT

VOLUME 30, NUMBER 1

MARCH 31, 1990

(NASA-IM-101105) SATELLITE SITUATION REPERT, VOLUME 30, NO. 1 (NASA) FO O

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SATELLITE SITUATION REPORT VOLUME 30 NO. 1 A/O 2400Z ON MARCH 31. 1990

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PROJECT OPERATIONS BRANCH CODE 513
NASA/GODDARD SPACE FLIGHT CENTER
GREENBELT. MARYLAND. U.S.A. 20771

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SPACE OBJECTS BOX SCORE

20557						SUM TOTAL
13928	11809	2119	6629	4740	1889	COLUMN
10140	8676	1464	3168	2036	1132	USSR
3150	2562	588	3025	2465	560	US
11	4	7	14	-	13	CX
0	0	0	~	0	N	SMEDEN
0	0	0	-	0	-	SPAIN
0	Ó	0	~	0	2	SAUDI ARABIA
69	51	18	1.3	ហ	00	PRC
•	u		0	0	0	NETHERLANDS
0	0	0	0	0	6	NATO
•	0	0	2	0	2	MEXICO
0	0	0	_	0		LUXEMBOURG
62	55	7	92	49	43	JAPAN
O)	0	υI	_	0	-	ITALY
N	j en		0	0	0	ISRAEL
jus	0	}	38	0	38	ORGANIZATION (ITSO)
						ATELL
						INTERNATIONAL TELECOM-
N	-	pus	4	0	•	INDONESIA
10	7	u	œ	0	8	INDIA
•	IJ	4	9	~	00	FRG
0	0	0	N	0	2	FRANCE/FRG
60	53	7	38	21	17	FRANCE
10	u	7	0	0	0	ESRO
391	388	u	181	162	19	ESA
-	0	-	0	0	0	CZECH
0	0	0	14	0	14	CANADA
0	0	0	3	0	u	BRAZIL
-	0	;	4	0	4	AUSTRALIA
0	0	0	-	0	~	ARGENTINA
TOTAL	DE	PAYLOAD	S TOTAL	DEBRI	PAYLOAD	
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50 52 53 53 58 59

EXPLORER 8 TIROS 2

XI 1 PI 1 PI 4

COURIER 18

101A G 101A 4 101A 5 NU 1

45 46 47 940 841

TRANSIT 2A

BETA 1 BETA 2 BETA 4 ETA 1 ETA 2

ETA 4 ETA 5 ICTA 2

PIONEER 5

ALPHA 1

1960 LAUNCHES

TIROS 1

NOTES

TRANSMITTING FREG. (MHZ)

NUMBER SOURCE

CATALOG

us Us

VANGUARD 1

BETA 1 BETA 2 6ETA 3

1958 LAUNCHES

NATIONAL DESIGNATION

1576

US US US US

VANGUARO 3 EXPLORER 7

PIONEER 4

LUNA 1

VANGUARD 2

ALPHA 1

ALPHA E

1959 LAUNCHES

635 568 603 599 483 273 871

2538 1867 2050 2086 1529 334 985

1117.9 1110.0 1112.2 1112.5 105.3 90.6 103.6

SEP FEB FEB FEB FEB FEB VUL 118 118 118 118 118 129 129

EXPLORER 11

TRANSIT 4A INJUN-SR-3

92 3927 4026 107 3739

95.7 58.3 HELIOCENTRIC ORBIT

US USSR

19436

VENERA 1

1961 LAUNCHES

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APSI

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TRANSMITTING FREQ. (MHZ)

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MANA			OBJECTS	Z	ORBIT				
1902 LAUNCHES (CONT.) 140 150		CATALOG	SOURCE	LAUNCH	PER 100 MINUTES	INCLI- NATION	APOGEE Km.	PERIGEE KM.	TRANSMITTING FREG. (MHZ)
## 12	962 LAUNCHES (CONT.								
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CATALOG NUMBER SOURCE LAUNCH

PERIOD MINUTES

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TRANSMITTING FREQ.(MHZ)

NOTES

INTER-NATIONAL DESIGNATION

NAME

1965 LAUNCHES (CONT.)

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NOTES

6			08JE	CTS IN ORBIT	116				
NATER-		CATALDG			PERIOD	INCL 1-	APOGEE	PERIGEE	TRANSMITTING
DESIGNATION	NAME	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	X X	¥	FREG.(MHZ)
1965 LAUNCHE	HES (CONT.)								
1965 051C		1440	Sn		96.4	98.6	639	530	
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	00 803800	1570	USSR		115.0	56.1	1539	1366	
		1571	USSR		115.3	56.1	1542	1396	
9 6 5		1572	USSR	_	115.7	56.1	1551	1419	
965		1573	USSR	3 SEP	116.0	56.1	1563	1442	
		1574	USSR		116.4	56.1	1572	1466	
965		1575	USSR		114.6	v	1515	1356	
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		1590	USSR		ø	56.1	1639	1360	
		1591	USSR		116.3	56.1	1659	1369	
65		1617	S			56.1	1740	1358	
		1618	USSR	18 SEP	117.4	56.2	1743	1383	
		2647	USSR		116.0	56.1	4	P)	
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965		1616	OS			144.3	2774	410	
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NATIONAL DESIGNATION	ZAMM	CATALOG	SOURCE	L ACNCH	PERIOD	INCLI-	APOGEE	PERIGEE
	י י					2	7	7
1965 LAUNCHES	ES (CONT.)							
0		2988	SU	0 NOV	121.3	59.2	2324	1150
UZ60 5961 VI60 5961	VENERA 2	1730	USSR		HE			
O.	EXPLORER 35	1738	- COUR		HELIO		ORBIT	
65 0		1739	CS	NOV O	100-3	7 59.7	873	676
0		2013	SO		98.6	50.7	766	ď
		2088	SO		100.3	59.7	861	ON 00 00 U
	A-1	1778	FRANCE		107.8	34.2	1720	N (
		1805	FRANCE		106.7	34.3	1621	523
1965 0984		1996	FRANCE		103.0	34.2	1286	-
0 6	EXPLOSER 31	1004	CANADA		118.7	79.8	2744	0
		1807	G 0	NOV NOV	120.3	79.8	2668	0
		1808	SO		100.0	70.8	1973	
		1944	SO		108.2	79.8	1797	3 0 0 0 0 0
1965 0986		1948	S		114.6	79.9	2376	500
1965 098H		1951	S		115.1	79.7	2423	492
٥		2153	CS S	29 NOV	119.0	79.9	2765	504
	FR-1	1814	FRANCE		99.1	75.9	719	708
	,	1915	S		98.9	75.9	711	701
1068 1064	1	1841	SO		HELIOCE	NTRIC	ORBIT	
	100	1843		17 DEC	95.9	65.0	629	496
_	NNSS 30060	1864	C S S S	22 DEC	104.7	00.0	560) (1) (2)
		1865	S	N 1	104.8	89.1	1066	B 00
		2086	SO	N	101.3	89.1	842	793
3 6		2226	S		106.9	89.1	1273	888
		1037	105	, N	٠	•	1111	876
1		• •	2	מס מבר	1.06	9	542	506
FACO FACACICA	<i>:</i>							
0	NNSS 30070	1952	SO	28 JAN	105.6	89.8	1190	850
1966 0050		1953	S		105.7	ø	1196	853
0 6		2140	S		107.3	90.1	1352	849
00		1412	50		103.5	89.8	1033	818
0		2989	S	NO LAN	103.7	8 0 · 0	1028	1071
		11991	S	28 JAN	105.3	89.8	1168	00 00 4> 0
		19366	S		98.9	89.8	746	664
1966 0084	0	2001	USSR		BARYCENTRIC	NTRIC ORBIT	-	
1966 0088	L 0 0 3	1982	S		99.8	97.9	813	686
966 0		2085	- C		99.5	97.9	803	668
0		2118		אור קרש	97.3	97.7	651	610
0		2154	US			93.0	922 660	693
0	D-1A	2016	FRANCE	•	116.4	30 - 1	0 / / O	# 00 • ^
66 0		2017	FRANCE		115.4	34.1	N M	JI 0
1966 013F		2023	FRANCE	17 FEB	100-6	34.0	1135	₽ (
				1				4

TRANSMITTING FREQ.(MHZ)

Decisionation Notate Source Launche Nutrition Nutritio			CATALDG			PFRIDD		APOGFF	DFRIGEE	RANTITING
1506 LAUNCYCES CONIT. 1967 LAUNCYCES CONIT. LAUNCYCES LAUNCYCES CONIT. LAUNCYCES LAUNCYC	DESIGNATION		NUMBER	SOURCE	LAUNCH	MINUTES	NATION	K W	X.	FREG. (MHZ)
100 100	995									
100.0 100.	0 99		1.5	RANC	7 FE	•	•	v	0	
100.00 101.00 1	99	SSA	0	S	8 FE	'n	8	1412	1352	
1906 0 10 10 10 10 10 10 10	99		2096	ns	00	13.	101.0	1412	1351	
10.00 10.0	99		2223	SN	60	11.	101.2	1382	1237	
10.00 10.14 10.1	99		2224	SO	80	5	101.2	1562	1346	
100 100	99		6214	ns	60	•	101.6	1514	1328	
1906 0.265 0.01-5 0.05 0.05 0.04 0.05	99	'n	2119	OS	vo	05.	8.68	1100	884	
1966 0.254 0.01-4 0.12 0.15 0.15 0.14-5 0.10 0.	99		2120	ns	6	0	ċ	1107	886	
1966 0.56 0.01-5 0.01-	99		2121	SN	۵	0	44.	1010	885	
1966 0.256 21.23 US 310 MAR 105.6 144.6 105.8 106.6 21.24 US 310 MAR 105.6 144.6 105.8 106.6 25.8 21.2 US 310 MAR 105.6 144.6 95.8 25.9 US 310 MAR 105.1 144.6 95.8 25.9 US 310 MAR 105.6 95.4 95.8 25.9 US 310 MAR 105.6 95.8 25.9 US 310 MAR 96.1 96.2 95.1 95.2 25	99		2112	OS	0	05.	4	1058	985	
1966 0.256 0.256 0.256 0.556	996		2123	SN	0	05.	4	1058	986	
1966 0.256 0.556	99		2124	SN	0	0	4	1008	886	
1966 0.256 0.256 0.5 3.01 MAR 10.0 144.6 9.6. 9.6. 9.6. 9.	99		3611	SO	0	03	4	958	850	
1966 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.254 1960 0.256 196	99		5361	SO	0	9	4	983	912	
1966 0260 1964 19	99		2599	ns	0	03	4	954	857	
96 2129 US 31 MAR 96.1 98.2 763 96 226 226 2179 US 31 MAR 96.9 98.1 677 96 226 227 LUVA 10 2120 USSR 31 MAR 96.9 98.1 677 96 27 LUVA 10 2212 USSR 31 MAR 96.9 98.1 677 96 27 2120 USSR 31 MAR BAPYCENTRIC ORBIT 677 96 0.37 2120 USSR 31 MAR BAPYCENTRIC ORBIT 796 96 0.31 MAP 100.7 35.0 783 96 0.34 UVS 2124 USS 3 APR 100.4 35.0 783 96 0.34 WAP 100.4 35.0 783 96.0 96.0 96.0 96 0.34 WAP 100.4 35.0 783 96.0 96.0 96.0	99		2125	os	_	Ø.	œ	871	609	
1966 0 220 2177	996		2129	Sn	-	8	Ø	ø	574	
1966 0.276 CUM 10 CLICA 11 MAR 96.0 96.1 CTT 1966 0.276 CLICA CL	0 996		2117	Sn	_	00	6*86	971	109	
1966 0274 CUNA 10 C126 USSR 31 MAR SELENOCENTRIC ORBIT C131 USSR 31 MAR SELENOCENTRIC ORBIT C132 USSR 31 MAR SEAVENTRIC ORBIT C132 USSR 310 MAR SEAVENTRI	996		5179	Sn	_	ø	98.1	677	4	
1966 0270 1966 0277 1960 0277 1960 0	996		2126	USSR	-	SELENO	CENTRIC ORE	-		
1966 0314 0AD 1 2142 USSR 31 MAR BARYCENTRIC ORBIT 1966 0314 0AD 1 2142 USSR 31 MAR BARYCENTRIC ORBIT 1966 0314 0AD 1 2144 US 22 APR 100.7 35.0 783 798 1966 0314 0AD 1 2160 US 22 APR 119.1 82.4 4414 196 0314 0AD 1 2160 US 22 APR 119.1 82.4 2950 1966 0408 US 2173 USS 30090 2176 US 15 MAY 107.8 100.6 1167 1197 1196 0416 NNSS 30090 2176 US 19 MAY 107.8 100.6 1167 1197 1196 0416 0416 NNSS 30090 2176 US 19 MAY 103.1 90.0 965 1167 1196 0416 0416 NNSS 30090 2176 US 19 MAY 103.1 90.0 965 1167 1196 0416 0416 0416 0416 0416 0416 0416 041	996		2130	USSR	_	HEL I OCI	2			
1966 0314	900		2131	USSR	-	BARYCE	U			
1906 0348	900		2132	USSR	1	BARY	0881	i	1	
100.00 1	995	0AD 1	2142	S O		0 (35.0	796	786	
1966 0.5 M MMBUS 2.173 US 2.5 APR 1.951 0.5 4.0 4.0	0 40	0 × 3 • 1	4417	<u>د</u> د	2 0 0	0 4	33.0	661	0//	
1966 0.40 0.00	9 0	•	2157	3 2	u c) -	* 60	1 1 1 1	N 6	
1966 0408 1967 1967 1967 1966 0408 1967 1966 0408 1966 0408 1966 0418	9 40		2173	n v	v v	4 6	9 6	1175	1001	
1966 041A NNSS 30090 2176 US 19 MAY 102.9 90.0 957 1966 041B 1966 041C 2225 US 19 MAY 103.1 90.0 965 195	999		2174	S S	ים ר	9 0	3 8	1167	1001	
1966 0416	966	m; un	2176	13	0	, 6	8	0.57	7.68	
1966 041C 2225 US 19 MAY 99.4 89.9 759 1966 041D 2644 US US 19 MAY 105.1 90.0 1162 1966 041E 4555 US US 19 MAY 102.1 90.0 905 1966 045B 4555 US US 19 MAY BARYCENTRIC ORBIT 90.0 909 1966 045B 2137 US US 10 JUN 142.9 40.8 4682 1966 052A 2201 US 10 JUN 142.9 40.8 4682 1966 052B 2201 US US 10 JUN 142.9 40.8 4682 1966 052C 2201 US US 10 JUN 142.9 40.8 4682 1966 052D 2201 US US 10 JUN 144.9 40.8 4682 1966 053A 2215 US US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2216 US 10 JUN 1338.6 8.0	995		2180	SO	0	03	0.06	965	841	
1966 041D 2644 US 19 MAY 105.1 90.0 957 1966 041E 3591 US 19 MAY 103.0 90.0 957 1966 045E 4555 US 19 MAY 102.1 90.0 957 1966 045B 2197 US 7 UNN CURRENT ELEMENTS NOT MAINTAINE 1966 052A 2201 US 10 JUN 142.9 40.8 4682 1966 052B 2201 US 10 JUN 142.9 40.8 4682 1966 052B 2206 US 10 JUN 142.9 40.8 46.82 1966 052B 2206 US 10 JUN 142.9 40.8 46.82 1966 052B 2205 US 10 JUN 142.9 40.8 46.82 1966 053A 2216 US 10 JUN 142.9 40.7 435 1966 053B 2216 US <t< td=""><td>996</td><td></td><td>2225</td><td>ns</td><td>0</td><td>66</td><td>69.9</td><td>759</td><td>702</td><td></td></t<>	996		2225	ns	0	66	69.9	759	702	
1966 041E 3591 US 19 MAY 103.0 90.0 957 1966 041F 4555 US 19 MAY 102.1 90.0 90.9 1966 045B 2137 US 10 JUN 142.9 40.8 4709 1966 052A 2201 US 10 JUN 142.9 40.8 4682 1966 052B 2206 US 10 JUN 142.9 40.8 4682 1966 052B 2206 US 10 JUN 142.6 40.8 4682 1966 052C 2249 US 10 JUN 142.9 40.8 4682 1966 052C 2249 US 10 JUN 144.9 40.8 4682 1966 053C 2216 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2216 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2218 US 16 JUN	995		2644	ns	0	05	0.06	16	834	
19 66 041F 4555 US 19 MAY 102.1 90.0 909 1966 045B 2137 US 30 MAY BARYCENTRIC ORBIT 90.0 909 1966 049A 060 3 2195 US 10 JUN 142.9 40.8 4709 1966 052A 2201 US 10 JUN 142.6 40.8 4682 1966 052C 220B US 10 JUN 142.6 40.8 4682 1966 052C 22B 2498 US 10 JUN 144.9 40.7 4586 1966 052C 22D US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 2207 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 22D US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 22D US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 22D US 16 JUN<	995		3591	ns	0	03	0.06	S	838	
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1966 049A 050 3 2195 US 7 JUN 142.9 40.8 4709 1966 052A 2201 US 10 JUN 142.9 40.8 4709 1966 052B 2206 US 10 JUN 139.0 40.6 4435 1966 052B 2207 US 10 JUN 144.9 40.7 4586 1966 053B 2207 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 33 1966 053C 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 340 40.7 4586 1966 053C 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 340 40.7 4586 1966 053C 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 340 40.7 4586 1966 053F 2229 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053F 2222	9 6 6		2137	S O	0	BARYCE	TRIC			
1966 052A 2201 US 10 JUN 142.9 40.8 4709 1966 052B 2206 US 10 JUN 142.6 40.8 4682 1966 052C 2516 US 10 JUN 139.0 40.6 4435 1966 052C 2516 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053A 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 1966 053C 11.99 94 TI1.9 34728 33728 <td>966 04</td> <td></td> <td>2135</td> <td>ns</td> <td></td> <td></td> <td></td> <td>¥</td> <td>٥</td> <td></td>	966 04		2135	ns				¥	٥	
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1966 052C 2498 US 10 JUN 139.0 40.6 4435 1966 052D 2207 US 10 JUN 144.9 40.7 4586 1966 053A 2207 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053C 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053E 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053F 8.0 34017 31 1966 053F 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINE	0 996		5206	ns	0	5	40.8	4682	647	
1966 052D 2516 US 10 JUN 144.9 40.7 4586 93 1966 053A 2207 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053C 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053C 2216 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053F 2219 US 16 JUN 1338.6 8.0 34017 1966 053F 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053F 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2222 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2222 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 34728 3341	0		2498	SO	0	39	40.6	4435	587	
1966 053A 2207 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053B 2215 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053C 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053E 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053F 8.0 34017 3364 1966 053F 1966 053G 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053J 2222 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053J 3472B 3472B	1566 0		5216	SO	0		40.7	458	r)	
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1966 053C 2216 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053D 2217 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053F 8.0 34017 336.6 1966 053F 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053J 2222 US 16 JUN 1349.4 11.9 1966 053J 34728 3341	1966 0		2215	Sn	ø	CURREN	EL EMENT		TAINED	
1900 053U CURRENT ELEMENTS NOT MAINTAINED 2218 US 16 JUN 1338.6 8.0 34017 3369.6 15966 053F 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2221 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053J 2522 US 16 JUN 1349.4 11.9 34728 3341	1966 0		2216	s o	ø,	CURREN	ELEMENT		TAINED	
1966 053E 2218 US 16 JUN 1338.6 8.0 34017 3369 1966 053F 2219 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053G 2220 US 16 JUN CURRENT ELEMENTS NOT MAINTAINED 1966 053H 2222 US 16 JUN 1349.4 11.9 34728 3341	000		2217	s o	0	CURRE	ELEMEN	NON	INED	
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1906-053H CURRENT ELEMENTS NOT MAINTAINED 1966-053H CURRENT ELEMENTS NOT MAINTAINED 1966-053J 2222 US 16 JUN 1349-4 11-9 34728 3341	1966 03		2230	n u			ELEMEN.		TAINED	
1966 053J 34728 3341	1966		2221	n v		א מי	FI FMFNT		TATAFD	
	1966 05		2222	מ כ כ		349.4	11.9	28		
			\$ 1 1	3		· •	•	:	•	

1967 LAUNCHES

CATALOG NUMBER SOURCE LAUNCH

PER 100

INCLI-

APOGEE

PERIGEE

TRANSMITTING FREQ.(MHZ)

NOTES

INTER-NATIONAL DESIGNATION

NAME

	•	-	139.7	11 DFC	GS.	v		٠,	1966
	717	93.4	98.0	_	S	2621		_	1966
	660	93.4	97.0	11 DEC	SU	2611	0V1-10	_	1966
	4663	99.1	140.4	11 DEC	S	2610	-1	_	1966
35740	35775	13.5	1434.6	7	SO	2608	ATS 1		1966
	28031	17.7	489.6	0	S	11792		٥	1966
	37092	18.5	717.2	26 OCT	1150	2514	INTELSAT 2 F-1	٥	1966
	117		BARYCE	Ŋ	S	2513		0	1966
	ORBIT	SELENOCENTRIC O	SELENC	22 OCT	USSR	2508	CONP 15	0	1966
	3706	90.1	167.6	5 OCT	SO	2520	SECOR (EGRS) 8	c	1966
	3720	90.1	167.5	5 OCT	S	2481		0	1966
NTAI	S	NT ELEMENT	RRE		S	8791			1966
		-	_		Sn	6213			1966
	1471	101.0	113.2	_	S	2775			1966
	1558	100.8	۰	2 OCT	SO	2518			1966
	1482	101.1	O		Sn	2436		0878	1966
	1483	101.0	U1	2 OCT	SO	2435	ESSA J		1966
	T	NTRIC ORB	RYCE	20 SEP	SO	2426		0848	1966
	860	98.5	100.2	16 SEP	SO	2422			1966
	865	98.5	100.3	16 SEP	SO	2418			1966
	ORBIT	0	H		USSR	2406	LUNA 11		1966
				•	SO	2412	E 20 15		1966
	3697	89.7	167.5	19 AUG	S	2411	SECOR (EGRS) 7	0	1966
	3707	89.7	167.4	19 AUG	S	2403			1966
	1199	88.6	108.0	œ	SU	2702		_	1966
	1062	89.2	104.9	00	SO	2580		_	1966
	1093	88.9	106.6	18 AUG	S	2413		۵	1966
	1091		106.5	18 AUG	SO	2401	NNSS 30100	0	1966
	118	HELIOCENTRIC ORB	HELIOC	7	SU	2402		0	1966
	718	ENTRIC ORB	HEL IOC	7	SO	2398	PIONEER 7	0	1966
	7	NTRIC	RYCE		S	2 395		_	1966
	3706	81.5	128.6		SO	2800			1966
	1566	81.4	103.9		SO	2404		_	1966
	3412	81.4	124.5		S	2389	OV 3-3	_	1966
	1007	144.2	105.2		S	2337		ο.	1966
	984	144.2	104.7		CS:	2329		ο ,	1966
	1012	144.2	105.2		S	2328		0	1966
	973	-	104.2	•	S	2327		Ö	1966
ZTAIZ	S NOT MAI	TELEMENT	CURREN	<u>ا</u> ا	SU	2260		0	1966
ZTAIZ	S	MENT.	70 70 TO		S	2258	EXPLORER 33	c.	1966
	5 4 3 6	84.8	179.9		S	9468		C)	C)
	6963	83.3	175.2		S	8074		05	1966
	6372 45	81.9	160.7	4	Sn	8066		O US	O.
	6016	84.3	177.7	4	Sn	8064		O)	1966
	4254	87.0	181.5	24 JUN	S			Œ	1966
	4271	86.9	181.3	٥	SO	N		56	Ch
	4277	86.9	181.1	24 JUN	Sn	2255		0568	1966
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1967 034A NNSS 30120 2754 US 14 APR 106.3 90.2 1065 11967 034B 2755 US 14 APR 106.4 90.2 1072 11967 034C 2777 US 14 APR 103.4 90.2 1025 1065 11967 034C 2778 US 14 APR 103.4 90.2 1025 1067 034C 2778 US 14 APR 108.3 90.2 1244 11967 034C 2764 US 17 APR 106.7 90.4 1093 11967 036A ESSA 5 2757 US 20 APR 113.5 101.9 1419 11967 036C 2976 US 20 APR 113.5 102.0 1419 11967 036C US 20 APR 112.3 102.2 1408 11967 036C US 20 APR 112.3 102.2 1408	TOTAL TIMESTANT OF THE CONTRACT OF THE CONTRAC	0.44
1967 0348 NNSS 30120 2755 US 14 APR 106.4 90.2 1072 1 1967 0348 1034 90.2 1072 1 1967 0346 2776 US 14 APR 103.4 90.2 1025 1 1967 0346 ESSA 5 2776 US 14 APR 108.3 90.2 1244 1 1967 0358 ESSA 5 2757 US 20 APR 113.5 101.9 1 1967 0366 US 20 APR 113.5 102.0 1419 1 1967 0366 US 20 APR 113.5 102.0 1408 1	00 4 4 100 02-14 100 000 000 000 000 000 000 000 000 0	2001
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1967 035B 2764 US 17 APR BARYCENTRIC ORBIT 1967 036A ESSA 5 2757 US 20 APR 113.5 101.9 1419 13 1967 036B 2758 US 20 APR 113.5 102.0 1419 13 1967 036C 2976 US 20 APR 112.3 102.2 1408 12	1967 034E 4843 US 14 APR 106.7 90.	4 1093 1
1967 036A ESSA 5 2757 US 20 APR 113.5 101.9 1419 13 1967 036B LS 20 APR 113.5 102.0 1419 13 1967 036C 2976 US 20 APR 112.3 102.2 1408 12	1967 0358 2764 US 17 APR BARYCENTRIC	ORBIT
1967 036B	1967 036A ESSA 5 2757 US 20 APR 113.5 101.	9 1419 13
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CATALOG NUMBER SOURCE LAUNCH

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APOGEE KM.

PERIGEE

TRANSMITTING FREQ.(MHZ)

INTER-NATIONAL DESIGNATION

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1967 LAUNCHES (CONT.)

1967 092H	1967 0926			1967 0928	1967 092A	1967 084B	1967 080B	1967 080A	1967 075B	1967 070A		1967 0666			1967 066D						1967 0654					1967 0536			1967 053D	1967 0536			1967 048C	1967 0488	1967 048A			1967 045A	1067 0407			1967 0400		1967 040A	1967 0398	
					NNSS 30140					EXPLORER 35			DODGE					TITAN 3 C-14	•	1	SECOR (EGRS) 0	N X L Z (I X U	,						GRAVITY GRADIENT 5	COADIENT					NNSS 30130		,	COSMOS 158		ERS 27		ERS 18				
20009	17176	3122	2994	2967	2965	2938	2940	2920	2908	2884	2883	2868	2867	2866	2865	2864	2863	2862	2877	2876	2840	245	19245	2909	2874	2973	2872	2847	2834	2825	2826	19222	17723	2811	2807	2823	2802	2801	2710	2769	2768	2767	2766	2765	2763	
S	S	S	SO	S	US	S	S	S	SO	Sn	S	S	S	S	SU	S	SU	S		5 6	S	0.5	S	SN	S	SU	SU	US C	5 0	S	S	S	Sn	S	SO	USSR	USSR	GSSU	100	US	S	S	Sn	Sn	USSR	
		25 SEP		25 SEP	25 SEP	8 SEP	23 AUG	23 AUG	1 AUG	19 JUL	14 JUL	ז שער	ו שער	ז יחר	1 JUL	ז יחר	וייטר		20 JUN	70 J. 10 V					31 MAY				YAN TE			18 MAY	18 MAY					7 M M M M M M M M M M M M M M M M M M M		00	0	28 APR	28 APR	œ	27 APR	
103.9	103.9	108.9	103.8	106.6	106.5	BARYCENTRIC	101.8	101.9	BARYCEN	SELENDO	BARYCEN	1319.1	1318.9	1316.1	1313.7	1311.8	1310.4	1309.7	172.1	172.1	HELIOCENTRIC	HELIOCENTRIC	103.0	101.8	103.2	103.2	103.1	103.0	103.2	103.2	102.0	104.9	104.3	106.8	106.8	97.1	100.0	100.3	CURRENT	CURRENT	CURRENT	CURRENT	CURRENT	CURRENT	93.9	
89 . 2	89.2	1.68	89.4	89.2	N	TRIC ORBIT	99.0	99.1	BARYCENTRIC ORBIT	SELENOCENTRIC ORBIT	BARYCENTRIC ORBIT	9.5	5 • 2	9.5	4.3	3.2	1 - 2	1.2	90.0	90.0	NTRIC ORBIT			70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	89.6	89.7	89.6	89.6	74.0	74-0	74.9	EL EMENTS	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	81.2	1 1 1 1
968	964	1319	1012	1101	-	4	874		7	BIT		33651	33659	33616	33563	33553	33549	UR V	0 4	3040	J (IT		846	914	913	910	905	915	913	859	1019	978	1091	1090	O	10 C	913	NOT NA	NOT MA	NOT MA	NOT	NOT MAINT	NOT MAINT	9	
918	91 A	1031	865	1033	1031		817	820				33277	33270	33190	33147	33080	33030	33010	7 B C F	1675	7701		895	839	907	904	o '	D 10 0	905	905	844	961	940	1064	1061	000	710	7 4	INTAINED	INTAINED	AINED	AINED	AINED	AINED	<u>ئ</u> ان	. 000

Z ∢		CATALOG	3080	OBJECTS IN ORBIT	BIT	L	4 000€	9901090	
DEST GNATION	al XAX	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	X X	KW.	FRED. (MHZ)
1967 LAUNCHES	ES (CONT.)								
60 19	INTELSAT 2 F-4	5963	1150	€	1435.0	13.2	35810	35721	
1967 094C		2971	SO:		U	EL EMENT	S NOT MAI	NTAINED	
967 0		2980	s v	11 001	4 m	99.2	811	645	
67 1		3011	USSR		7	7.4.1	208	m a er n	
967 1		3019	USSR		96.3	64.1	708	0 00 V 167 F 47	
1967 111A	ATS 3	3029	SN:			13.1	42	29412	
7 296	∀ ∀ ∀ ∀	3034	s o	~ (۸.	ENTRIC DRBI	<u>.</u>		
Ġ	5	3033	۶ <u>-</u>	0	114.8	102.2	1483	1406	
196		3000	0 Y		114.8	102.2	1483	1408	
		3123	SO	0	115.4	101	704.	1343	
67 1		5443	sn	0	114.6	101.5	1494	7 6 6	
	COSMOS 192	3047	USSR	m	E . 66	74.0	731	222	
		3048	USSR	E	99.2	74.0	727	717	
	IONEER	3066	SN	m	HELIOC	ENTRIC OR		•	
1967 127A	COSMOS 198	3081	USSR	7	103.4	65.1	948	887	
1963 LAUNCHE	S								
63 O		3092	ns	7	BARYOR	TIBOU STOLE	1		
53	EXPLORER 36	3093	NS		112.2 105.	•	1572	1079	
63 0		3094	ns		112.1	105.8	1564	1078	
w ·		3126	SN	11 JAN	112.3	106.1	1581	1082	
00 c		3127	sn		112.1	105.3	1570	1074	
0 4	CUSMUS 203	3129	assn:		109.2	74.0	1199	1181	
) 12) V	0 0 0 0 0 0 2 2 2	3131	USSR		109.2	74.1	1202	1180	
9 60	0100	5133	<i>s</i> 0		106.7	0.06	1132	ូ	
		3213	s o	Z MAR	106.8	90.1	1135	1017	
90		3214	5 2		7.00.	0.06	9201	877	
695		18594	S S	2 MAR	103.2	0.06	921	1021	
9.00	0 N 0	3134	USSR		HEL I OC	HELIOCENTRIC ORBIT)	
10 or	0.50	3138	sn:		CURRENT	EL EMENT	NOT	MAINTAINED	
		0116	s i		CURRENT	ELEMENT	S NOT MAIN'	MAINTAINED	
9 6	ארוטאניא ט	1916	SO	TAN TAN	93.1	59.4	471	383	
68		3151	850	7 A A	• • •	0 0	7 60 7	522	
58 0	COSM35 209	3158	USSR		100	2.10	0 F O	4.00	
958	1-1	3173	ns		198.9	100.0	9225	0 00	
968 0	371-14	3174	ns		207.2	1001	9849	595	,
968 0		3177	Sn		207.2	1001	9847	591	
968 0		3212	S n		198.5	6.66	9187	596	
0 695	UNA 14	3178	USSR		SELE	u	ORBIT		
D 0	CUSMUS 220	3229	USSR		98.4	74.0	713	647	
0 Q		3230	USSR	7 MAY	98.1	74.0	702	637	
		3231	USSR		93	74.1	469	444	
69 042		3200	S 0 2		•	0.66	886	807	
4 10		3283	80	23 MAY	101.8	0.66	488	806	
)		1 2 2	۲ 0 0		92.9	81.2	643	389	

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CATALOG NUMBER SOURCE LAUNCH

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INTER-NATIONAL DESIGNATION

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1466	80.4	114.3		Sn	3605		
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764	35.0	100.0		SU	3597	3A0=A3	
-	74.0	109.2	30 NOV	USSR	3577	CO2MO2 250	8 106A
1221	74.0	109.3	70 c	100	3576	TONER S	
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2007	100	, -		USSR	3 5 30	COSMOS 252	_
		101.0		US	3522		_
ن د	98.5	101.1		SO	3510		c)
ŧ	m	SEE NOT		USSR		100	0
2082	62.4	111.6		USSR	3504	COSMOS 249	0 1
586	11.0 3	1419.3		S	3432	1	0 (
6118	11.2	1435.3		S	3431	0 i	5 (
OT MAINTAI	ELEMENTS	CURRENT		SO	3430	C)	0
52	10.7	1416.1		S	3429	JY2-5	0 (
480	101.4	115.1		SO	4499		
	101.6	114.9		S	3975		
	102.0	114.9	16 AUG	S	3774		
	102.4	116.1	-	S	3417		
1485 1300	101.8	113.6		S	3416		2 6
1464	101.3	114.8		S	3346		0600
1470	101.4	114.9	-	S	3345	795A 7	
ø	80.6	111.3		US	E O E E		3 6
2016	80.7	112.7	-	us o	4 C C F F		
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2499		118.0	8 AUG	Sn	33 38	EXPLORER 46	
-	ELEMENTS	CURRENT	6 AUG	Sn	3334		o 1
97	7	155.4	4 JUL	SN	4841		
5869 5		224.1	4 JUL	SU	3848		964 0550
5750		155.8	4 JUL	SU	3315		O NO O O O O O O O O O O O O O O O O O
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ó	12.1	1363.7		S	3292		
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: !			OBJECTS	Z	ORBIT				
INIEH- NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD Minutes	INCLI- NATION	APOGEE KM.	PERIGEE Km.	TRANSMITTING FREG. (MHZ)
1968 LAUNCHE	tes (cont.)								
1968 114C		3811	ns	S	112.8	102.0	1462	1248	
895		3812	٩		116.3	102.5	1571	1458	
1968 116A 1968 118B	INTELSAT 3 F-2	3623	ITS0 US	19 DEC 21 DEC	1475.2 HEL IOC	13.4 IOCENTRIC OR	37132 ORBIT	35963	
	IES.								
1000	- VIVI	3669	ANADA	NAL OF	127.8	88.5	3479	576	
69	•	3670	ns.	ר ו	127.0	8	3407	572	
0 69		3673	SN		114.0	80.4	1429	1392	
		3841	SO		113.7		142	1368	
	INTELSAT 3 F-3	3674	1150		CURRENT		NON	MAINTAINED	
		5977	SO:	6 FEB	CURRENT	IT ELEMENTS		MAINTAINED	
1969 013A		100E	s =	יי פחקי			2 2	MATATATA	
		3759	S C		HELIOC	z			
		3760	s o	S)	HEL IDC	HEL IDCENTAIC OR	DRBIT		
	ESSA 9	3764	ns N		115.2		1502	1423	
		3767	SN		115.1	101.5	1498	1418	
0		3770	SO		HEL 100	Ö	911		
0 696	COSMOS 272	3818	USSR		109.2	74.0	1206	1176	
696		3819	USSR	17 MAR	109.1	74.0	1194	1177	
0 696		6289	USSR		108.0	0.47	1164	1100	
0 0 0 0	041-19	3825	S 0	X 4 2 4 4 5 4 5 4 5 4 5 6 5 6 6 6 6 6 6 6 6 6	150.0	104-3	5555	7 7 7	
	20 H H H H	2000 2000 2000 2000 2000 2000 2000 200	USSR		96.5	81.2	610	575	
0 696	MARINER 7	3837	SO		HEL I OC		0R81T		
0 696		3845	Sn		HELIDO	NTRIC	08811		
696		3889	sn		CURRENT	NT ELEMENTS	Z	VIAINED	
		3890	sn	14 APR	107.3	6.66		1070	
	SECOR (EGRS) 13	3891	sn		107.2	6.66	1127	1069	
1969 037C		3892	s i		107.3	100.0	1132	1073	
		8968	s o		HELIOC	HELIOCENIRIC ORBIT	1100		
1569 0430	LM/DESCENT	200 P	S0	× × × × × × × × × × × × × × × × × × ×	SELENC MELTO	SELENOCENIALO DE	DOBIT		
	TAYASCEN!	7967	1150		CUBBENT		¥ CZ	AINTAINFD	
1069 0464	62-8	3950	Sn:	23 MAY	CURRENT		NON	MAINTAINED	
	0.00	3951	ns		CURRENT		NOT	MAINTAINED	
0	0-9-0	3952	ns		CURRENT		NOT	NTAINED	
1969 046D		3954	SN		CURRENT		NOT	NTAINED	
1969 046E		3955	ΩS		CURRENT		FON	MAINTAINED	
1969 046F		3956	S O		CURRENT		P O Z	MAINTAINED	
		3993	SO		CURRENT	NT ELEMENTS	OT MAI	NTAINFO	
0		4 340	S i	16 JUL	HELIO	0	BIT		
	LUNAR MODULE	4041	Sn		SELEN	()	0R81T		
1969 062A		0	SO	23 JUL	101.0	6.86	O (771	
		0 (SD		100.9	8.00	30 G 40 G 40 G	2 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
400	L	C O	n 0	20 JUL	12/21	9000	36010	C02	
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DESIGNATION	JN NAME	NUMBER	SOURCE	LAUNCH	PERIOD	INCLI- NATION	APOGEE Km.	PFRIGEE KM.	TRANSMITTING FREG. (MHZ)
1970 LAUNCHE	CHES (CONT.)								
0 025		4377	OS	23 APR	TURRENT	S I M T M T I I	1	6 1 1 1 1	
0 025	MAG 1	1	PRC	4 A P	112.2		2015		
025		3	PRC	4	0	, «	1404	000	
1970 036A	COSMOS 336	m	USSR		115.4	•	4	1461	
2 6		m -	USSR	2	116.2	•	1550	1466	
1970 0360		4 3 8 5	USSR	2	115.8	74.0	1516	1465	
		4386	USSR	D.	115.0	74.0	1467	1443	
2 6		4397	USSR	co.	114.6	74.0	1468	1405	
	COSMUS 341	4388	USSR	2		74.0	1466	1340	
2 6		4389	USSR	ß	113.5	74.0	1466	1308	
2 0	40.00	4 3 90	USSR	S	114.2	74.0	1466	1372	
000		4301	USSR	S)	116.6	74.0	1585	1466	
	- 17	4393	USSR		9.96	81.2	620	570	
0 0		4334	บรรล	œ	97.1	81.2	669	537	
2 6		4418	ns	0	CURRENT	ELEMENTS	HON	MAINTAINED	
2 6	1	4511	ns		CURRENT		NOT	NTAINED	
W/ #0 0/ 51	MILEON	6144	USSR	23 JUN	101.9		875	718	
2 6	:	ŧς	USSR		102.1	81.2	922	791	
	INTELSAT 3 = -8	4478	1150	23 JUL	1408.2	13.1	48488	21987	
		96 5 5	o.s		CURRENT		NOT	MAINTAINED	
2 0	m :	4493	ž		CURRENT	ELEMENT	NOT	NIAINED	
	$\overline{}$	4497	USSR		90.5	74.0	304	207	
)	NNSS 30196	4507	ns	_	106.7	90.1	1205	945	
1970 0678 0500 0501		4515	ns		106.8	90.1	1209	746	
		5036	ns	_	103.2	1.06	928	600	
		2447	ns		109.2	1.06	1436	946	
1970 0094		4510	s O	1 SEP	CURRENT		NOT MAINTAINED	TAINED	
1910 0104		4512	SD		0	98.8	845	745	
	i	2 1	Sn		00	6.86	850	746	
	COUNTRY CO.	φ. 	USSR		104.5	65.3	1006	932	
620 0151		4578	USSR	N I	è.	74.0	734	729	
	COLUM	5 C C C	USSR	2	•	74.0	730	712	
0)	4083	USSR	r C	2	81.2	545	533	
	CONSULT STAN	40.04	USSR	ທີ່	95.	81.2	611	964	
		ים מים	200	0	100.5	74.1	190	177	
1970 0860		7 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	USSR	•	100.3	74.0	787	755	
		מ מ	2000		99.1	74 • 0	722	407	
	476 SEMSON	: (200	۰ م	2.66	•	249	740	
80.0	,	***	2002	າ ເ		63.0	1696	581	
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		46.50	S n		1198.1	15.7	36094	25883	
, ,	-	4532	ns O		1197.7	15.7	36102	25860	
٠.	180 00400	4733	USSR		104.8	74.0	1006	961	
٠-		4624	USSR		104.7	74.0	166	958	
670 1020		0484	USSR	2 DEC	0	74.0	806	793	
		5225	S	DE	104.1	74.0	196	040	
, ,		8764	USSR		4	74.0	978	941	
201		オカンカ	USSR	DE	101.6	74.0	839	829	

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NOTES

	•	. (4	100.0	25	CSSR	5300		1 0350	197
	747	767	1 - 4	•	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	COST	5175		1 0359	197
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	776	804	74.0	1.00.7		1000	5174			1161
	498	OT OT	81.2	95.6	17 APR	USSR	5 1 2	i	٠,	
		443	81.2	93.3	17 APR	8880	5142	WETERN	، ر	
		000	81.2	•	7 APR	USSR	5724		c	1971
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19 5488 USSR 28 SEP SELENDCENTRIC ORBIT 5490 USSR 28 SEP SELENDCENTRIC ORBIT 5544 5544 USSR 13 OCT 114.1 74.0 1506 05 445 5549 USSR 13 OCT 115.5 74.0 1512 05 448 5551 USSR 13 OCT 115.5 74.0 1512 05 448 5552 USSR 13 OCT 115.5 74.0 1515 05 449 5553 USSR 13 OCT 115.8 74.0 1515		5498	JAPAN		111.9		1757	970	
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444 5547 USSR 13 OCT 114.1 74.0 1506 445 5548 USSR 13 OCT 114.4 74.0 1509 446 5549 USSR 13 OCT 115.1 74.0 1512 448 5551 USSR 13 OCT 115.5 74.0 1515 449 5553 USSR 13 OCT 115.8 74.0 1539 450 5553 USSR 13 OCT 115.8 74.0 1527		24.30	บรรห		SELENO		RBIT		
445 5548 USSR 13 OCT 114.4 74.0 1509 446 5549 USSR 13 OCT 114.8 74.0 1510 447 5550 USSR 13 OCT 115.1 74.0 1512 448 5551 USSR 13 OCT 116.2 74.0 1539 450 5553 USSR 13 OCT 115.8 74.0 1527		5547	บรรล		4	74.0	1506	1313	
446 5549 USSR 13 OCT 114.8 74.0 1510 447 5550 USSR 13 OCT 115.1 74.0 1512 448 5551 USSR 13 OCT 115.5 74.0 1539 449 5553 USSR 13 OCT 115.8 74.0 1527		5548	USSR		4	74.0	1509	1348	
447 5550 USSR 13 OCT 115.1 74.0 1512 448 5551 USSR 13 OCT 115.5 74.0 1515 449 5552 USSR 13 OCT 116.2 74.0 1527 450 5553 USSR 13 OCT 115.8 74.0 1527		6929	USSR		3	74.0	1510	1379	
448 5551 USSR 13 OCT 115.5 74.0 1515 1 449 5552 USSR 13 OCT 116.2 74.0 1539 1 450 5553 USSR 13 OCT 115.8 74.0 1527 1		5550	USSR		S.	74.0	1512	1409	
449 5552 USSR 13 OCT 116.2 74.0 1539 1 450 5553 USSR 13 OCT 115.8 74.0 1527 1		5551	USSR		115.5	74.0	1515	1437	
0SM0S 450 5553 USSR 13 0CT 115.8 74.0 1527 1		52	USSR	O	116.2	74.0	1539	1441	
	0.5M0.S	3	USSR		S	74.0	1527	1459	

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	# F	1411	ا ل •			USSR	5905	COSMOS 480	972 0
	1 1 0 0	1 0 0 0		101.0	4	S	5904		1972 0188
	787	р (с Л (с С			•		J 40 L		972
	785	2 K D I -	HELIOCENIKIC		. (.	S	5861		
		1 7	~ V Y U F 3	VULAR		20	5860	PIONEER 10	
	404	י ני		95.2		USSR	5853		0
	\$ 4 0 0 -	n 4	2.10	9 4 5		USSR	5852	COSMOS 476	1972 011A
	.	AVAILABLE	. z	ELEMENTS	MAR	SO	5854		
				ELEMENTS	1 MAR	Sn	5851		1972 010A
	945			104.4	G	USSR	5847		72
	962	995	74.0	104.7		USSR	5846	COSMOS 475	972
		ORBIT	NOCENTRIC	(F)		USSR	5836		
	639	36486	28.3	653.3	23 JAN	SO	5816		72 0
	35872		7.4	1442.3	23 JAN	1750	5775	INTELSAT 4 F-4	1972 003A
								1ES	1972 LAUNCHES
	, c	7	a1.	100.4	29 DEC	USSR	15344		1971 120F
	74.2	300	. :	,	י ה	USSR	8827		71 1
	p 0	0000	21.2	101.5	C	USSR	8926		1971 1200
	3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	מ מר	0 CI	102.1	29 DEC	USSR	5732		_
	9 00	913	81.3	102.5		USSR	5731	METEOR	1971 120A
	388	2041	73.9	109.7	7	USSR	5730		_
	391	2084	73.9	110.2	7	USSR	5729	OREOL 1	_
	935	1021	64.5	104.7	J	USSR	5721	69	—
	35931	36007	9.1	1445.4	0	1150	5709	INTELSAT 4 F-3	
	751	770	74.0	100.1		USSR	5858		. .
	754	777	74.0	100.2		USSR	5778		1971 1140
	759	796	74.0	100.4	7	USSR	5707	3	1971 1148
	771	793	74.0	100-5	7	RSSU	5705	COSMOS ASA	
	961	994		104.6	15 DEC	USSR	5685	CDV300 400	
	964	1005	74.0) f		7007		
		AVAIL ABLE	Z 2	EL EMENTS		- 0	5081		
		AVAILAGLE	2 2	FLEMENIC		US	5680		
		AVAILABLE	Z	ELEMENTS		S	5679		
		AVAILABLE	NOT	ELEMENT	14 DEC	Sn	5678		
	1175	1209	0	109.3		USSR	5615		_
	1181	1215	74.0	109.4		USSR	5614	COSMOS 457	1971 0994
	272	18149	3.2	322.8		<u> </u>	55 O V	EVOI ODED AS	
	35977	37371	11.0	1434.7	N N N	- C	7 U		
	3 C 7 C 4	30010		1430.0		S OS	5587		٥
	4878A	1		105.0		Ş	5581		0
	יו ט ט ט	1447	•	104.9	00	Ş	5580	PROSPERO	1971 093A
	1 to 0	772	92.7	100.0		S	5560		
	778	872	99.0	101.4		SO	5556		0
	777	857	99.1	101.2	14 OCT	S	5557		71
	1501	1621	74.0	7.		USSR	5555		1971 086J
								ES (CONT.)	1971 LAUNCHES
FREQ. (MHZ)	XI.	X .	NATION	MINUTES	LAUNCH	SOURCE	NUMBER: SOURCE	NAME	DESIGNATION
TRANSMITTING	PERIGEE	APOGEE	INCL I-	PFR IOD			CAT A1 06		INTER

INTER-			OBJ	OBJECTS IN OR	ORBIT					
NATIONAL		CATALOG			060100	The Court	1		;	
DESIGNATION	NAME NAME	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	A 7 0 6 7 1	MEXICE X SEE	TRANSMITTING FREG. (MHZ)	NOT
1972 LAUNCHES	CHES (CONT.)									
2	METEOR	5917	assn		* 600		Ċ	1		
0		5913	USSR	Σ	ď	81.2	383	955		
0		6073	USSR		7.471	55.10	026	n 0		
72 0	PROSNOZ	5941	USSR		· U		S NOT MAINTAINES	CATMED C		
72	M 00	6009	O.S	9	SELENO	ENTRIC	ORBIT			\$
ACC 0 27 61	CUSMUS 489	6109	USSR		104.7		166	961		}
2 6	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6020	USSR	ø	4	74.0	986	955		
uΛ	INICLSAL 4 F-5	6052	ITSO		1438.7	\$ E	35851	35825		
22.0	404 ACMADO	6058	SO:		21	27.2	36470	541		
	Ť	6609	USSR		100.5	74.1	190	775		
1972 0430		605	2000	23 JUN	100.3	74.1	788	756		
0) v	1000	23 JUN	9	74.1	760	746		
	METEOR	6000	4550		1001	74.1	779	751		
		6080	8550	NI OF	0 0 0 0	7.10	842	878		
1972 049C		20348	USSR		102.8	2.18	826	957		
		6117	USSR		0.4.1	7.10	626	000		
972 0	٠,	6118	USSR		114.3	74-0	****	0101		
972 0	CDSM35 506	6119	USSR		114.6	74.0	1 404	0001		
972 0		6120	USSR		114.9	74.0	14041	1000		
972		6121	USSR		115.3	74.0	1494	7400		
972 0	COSMOS 509	6122	USSR	20 JUL	115.6	74.0	1496	1471		
ייייייייייייייייייייייייייייייייייייי	on a	6123	USSR	20 JUL	116.0	74.0	1507	1493		
1,500 5/ ¥1	CD5405 511	6124	USSR		116.4	74.0	1543	1493		
: 2	1 4 4 0 0 7 4 -	21	USSR	20 JUL	117.0	74.0	1600	1490		
0000	_	0170	s o			66.5	606	897		
466			SO:	M) 1	SEE NOTE		#			174
, 0	50.50	S#10	USSE		104.2	83.0	196	950		
972 062		0140	2 S S S S		104.2	83.0	962	948		
972 0		7550	2000	10 406	104.1	65.0	957	946		
0	COPERNICUS	6153	(v =	21.4	100.0	93.0	945	841		
972		10	s o		0.00	0.00	731	720		
	MS O	6154	USSR	21 AUG	10401	0.44	0.40	6/0		
	TRIAD OI-1X	6173	ns		100.1	0.00	000	y . y		
276		6190	Sn	2 SEP	99.7	0.06	786	407		
7690 7601	,	6250	ns		98.6	7.68	734	650		
	CUSMUS 520	6192	USSR	0	715.1	67.7	36568	3653		
277		6302	USSR	0	706.7			3709		
	COSMOR BUT	6197	0.5	m	3		S NOT MAINTAINED	AINED		
27.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9559	USSR	0	104.9	65.8	995	984		
272		1029	asso	0	4	65.8	1003	096		
972		0120	X 10 1		4	SC .	653	985		
		6217	۲ <u>۱</u>	2 OCT	98.1	98.6	675	663		
72			ה ט ב		O (oo .	716	700		
		6221	n u		99.2	• •	731	711		
		J T	ָר ע ב		8°,	CO (6 62	249		
72 0		1 6) <u>-</u>		114.7	c ı	1462	1417		
079		2 6	r on	10001	114.7	95.8	1483	1404		
		1	1)) • •	0.0	7661	1431		

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TRANSMITTING

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INTER-NATIONAL DESIGNATION

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73 0	0	o	0	0	٥	a			c		0	٥	1973 0196	1973 019A		/3 01) (C F (77 00	1973 005A	1973 LAUNCHE			1972 1048	1972 104A	1972 1025		2	٨				- c	1072 0808								5 (0	0	72 085	72 08	72 0	72 08	œ	1972 LAUNCHES
EXPLORER 49				COSMOS 569				05 NOS 56	COSMOS 564		ETEO	ANIX AD		PIONEER 11		3 D T T O C C	4n Tr Oo	f	~	CUSMOS 546	HES				COSMOS 540		COSMOS 539					n:	ANTK AL									.	<u>5</u> 2			METHOR		-	NOAA IO	ES (CONT.)
6546	6533	6682	6681	6590	6679	6678	6577	6676	6675	6650	6659	6437	6425	1740	6650		64.9	6380	6364	6350		6396	6391	6324	6323	0323	6319	6160	× 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6 3 1 7	6306	6305	6278	6276	6275	6271	6270	6259	6268	6267	6266	6265	6264	6262	6257	6255	6237	6236	6235	
Sn	c	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	CANADA	US		ב טע	1000	USSR	SO	USSR	USSR		USSR	USSR	CSSX			יים מיים מיים		<u>.</u>	15	SO	SO	CANADA	S	SO	USSR	USSR	USSR	USSR	บรรล	USSR	หรรก	USSR	USSR	USSR	USSR	S	SN	S	
NO O 1	J. C.Z.	9 704			BUUN		B JUN	NOF 6	B JUN	29 MAY	v		0)		z	15 FEB	26 JAN		25 050	J	ט ו	a U	אר סמר	-	- (9	2	-	-		YON 9	_	YON 1	1 NOV	1 NOV	NOV	1 NOV	1 200	1 NOV	1 NOV	1 NOV	26 OCT	26 OCT	15 OCT	15 OCT	15 OCT	
SELET	110.0	1.0.7	113.9	114.2	114.4	114.8	115.0	115.3	114.6	102.5	10%	0.000	•		SOL AR	102.6	102.4	CURRENT	CURRE	96.0		9			100	100.5	112.7		CURRENT	CURRENT	111.7	107.1	1457.1	101.5	101.3	116.6	114.3	113.9	(u)	113.4	4	113.7	114.5	114.1	102-4	102.3	٥	114.9	114.9	· · ·
SELENDOENIKIO		7.0	7.0	74.0	74.0	74.0	74.0	74.0	74.0	2.18	0 10	2.1	o r	.	SYSTEM E	81.3	81.2	NT ELEMENTS	Z	50.6			1 -1	74 1	74-1	74.1	74.0				99.8	99.7	8.4	98.9	98.8	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	81.3	81.3	102.8	101.8		?
CROL	٠,		1477	1478	1 4 70	1001	1480	100	1470		0 0	() () () () () () () () () ()	Л О Л		SCAPE TRAJE	923	882	NOT	NOT	57			7	770	772	794	1370	1 37	NOT	NO T	1515	0	36265	8	847	1591	1466	1465	1466	1465	1467	1465	1465	. 0		· ox	0		U	n
	7	1482	1317	1 14 C	بر بر الراج الراج الراج	1. 4. 1. 0. 0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	1 4 6		7467	1 0 K	8 A 3	- 1	30 30 31 31		CTORY	934	861	MAINTAINED	MALVINE	549		;	717	723	757	766	1334	1340	MAINTAINED	MAINTAINED	1098	1087	36129	801	790	1464	1382	1347	1314	1298	1418	1331	1400	1 504	900) (i	9 E J	1 2 2		

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	INTER	ģ			08JECT	CTS IN ORBIT	31.1				
	ITAN	NATIONAL		CATALOG			PERIOD	INCLI	APOGEF	0 10 10 10	CALL PARTY OF THE
	DESI	DEST GNATION	NAME	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	×	KM.	FREG. (MHZ)
	1973	LAUNCHES	HES (CONT.)								
	1973	0380		66.80	91	2					
	1973	039		6725	Sn		משנים שנים	ORKENI ELEMENIS NOI	Σ.	AINTAINED	
	1973			6726	o SO		SELEND	SELENDCENIALC UP	- 101		
	1973			6691	s S		THE PERSON A PROPERTY OF A PRO	TO NOT AND	UKBIT		
	1973	040		11940	o so	12 JUN	ELFMFNTS		AVAILAGLE AVATIABLE		
	1973		COSMOS 574	6707	USSR		105.0	82.9	1007	970	
	1973			6708	USSR		0	82.9		67.6	
	7 7 7			6742	USSR	21 JUL	HEL I OCI	HEL I OCENTRIC ORBI		•	
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			6754	USSR		AREOCENTRIC	_	—		
		4 7 E E	M X X X X X X X X X X X X X X X X X X X	6768	USSR		AREOCENTRIC		<u></u>		
		0 6	1 2004U	6776	USSR		HEL I OCI	HELIOCENTRIC ORBIT	31.1		
		, ,	CAPSULE	7224	USSR	o AUG	HEL I OCENTRIC	ENTRIC ORBIT	111		
	1073	, ,		6/87	s o		101.0	98.7	828	786	
	107	9 0		6788	ns		101.2		835	262	
	1073			6791	Sn		CURRENT		ž		
	1074	•	,	6732	ns		CURRENT		Z	A I NED	
	1073		INICLORI 4 FT	9619	I T SO	23 AUG	1452.5	7.3	36137	36075	
				6797	SO		652.7	27.5	36553	93.9	
		4 4 4 5 5 C	CUSMUS 585	6825	USSR		113.5	74.0	1403	1372	
	7 7 7 7		1	6826	USSR		113.4	74.0	1403	1357	
		¥ 000	CUSMUS 586	6828	USSR	14 SEP	104.7	82.9	1002	096	
	1074			6829	USSR		104.6	82.9	366	958	
				6845	USSR		115.3	74.0	1491	1446	
	1973		COSMOS DOG	6846	USSR	2 OCT	114.9	74.0	1486	4.1	
	1973			7 4 5 0	USSR		115.1	74.0	1485	1431	
	1973			8480	asso		114.1	74.0	1484	1344	
	1973			0 4 40 0 0 1	USSR		113.9	74.0	1483	1327	
	1973			0820	USSR		114.3	74.0	1483	1361	
	1973			0851	USSR		114.5	74.0	1484	1378	
	1973			2680	USSR		114.7	74.0	1483	1395	
	1073			5655	USSR		117.1	74.0	1620	1483	
	1973		ב און און	0893	so:			s	ILABLE		
	1973	0780		0890	S		101.8		1340	343	
	1 973		**** BOM 80.0	6896	SO		CURRENT		NOT MAINTAINED	AINED	
	1973		100 00000	2069	USSR	29 OCT	94.5	81.2	501	489	
	1973	0.81A	COCOF SCNN	8000	USSK		94.8	81.2	534	482	
	1973	0818		0000	n u		105.3	60.68	1128	887	
	1973	0810		27.0	ָרָי נְיִּרָּ בּרִי בִּי		105.3	89.9	1129	888	
	1973	0.84A	COSMOS 606	* O C C	200		105.8	90.5	11177	068	
	1973	0840		0160	200		718.8	67.8	745	2962	
	1973	085A	MARINER 10	0.00	X 00 0	70N 2	706.5			5809	
	1973	086A			ה ני ס		MELIDCENTAIC	088	-1		
	1973	0.869		٧.	s :		116.1	102.0	1509	1498	
<i>.</i> .	1073				SO:		SEE NOT	1.8	*		
	1073			6938	ns	10 NOV	114.5	6.96	1454	1412	
	1973	0 0	,	7559	Sn		114.6	96.8	. 4	1400	
-			CUSMUS 614	6969	USSR		100.3	74.0	701	755	
. بن				9969	USSR		100.2	74.0	784	750	
r	- r			96	USSR	4 DEC	2.66	74.1	731	70.5	
	•	١.		6996	USSR	4 DEC	100.0	74.1	171	741	
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TRANSMITTING FREQ.(MHZ)

TER-					PERIOD	INCLI-	APOGEE	DERIGEE
DESIGNATION	NAME	NO AUT	SOURCE		7 6 7		:	
1973 LAUNCHE	ES (CONT.)							
673 100		6973	SU	3 DE	1474.6	11.1	36668	36405
973 10		•	S		436.	10.8	35787	35786
200		6976	S	w	515.	11.7		3610 1010 1010
	SOS	6985	USSR		113.9	74.0	1481	2001
	ô	6986	USSR	•	1 01	74.0	1 L	1441
973 1	SOF	6987	USSR	0	n CR	74.0	1001	144
973	SO	6988	SS			74.0	1641	1404
973	U)	6989	USSR	19 DEC	4	74-0	1482	1367
1973 104F	SOM	6990	າທ			74.0	1463	1365
973	MOS 62	6991	USSR			74-0	1483	1349
1973 104H	COSMOS 624	2669			117.0	74.0	ο.	1473
973 1	 	2002	בות מות מות א		•	74.0	1588	389
_	OREOL 2	7005	2007) C	74.0	1543	363
973 10	2	7005	USSR R	27 DEC	104.0	65.4	992	908
973 1	COSMOS 627	7008	USSR		04.	83.0	1014	964
1973 1098		7009	USSR	29 DEC	104.6	83.0	990	196
1974 LAUNCHE	ES							
1974 001A	COSMOS 628	7094	USSR	7 J		2	1008	951
74 0		7095	S		04.	82.9	9 40	E C 8
974 0	METEOR	7209	USSR	(5) X A	202	0 C	0000	793
974 0		7210	USSR	U III	100.5	97.8	880	683
974 01	UX - X4	7228	5	O V	100.6	97.B	876	693
974 0		7218	CS C	-	101.0	99.0	853	763
1974 0158		7219	S		101.3	99.0		760
974 0	COSMOS 637	7229	USSR	26 MAR	428.	110	35363	7 4 F 5 F 5 F 5 F 5 F 5 F 5 F 5 F 5 F 5 F
974 0		11567	USSR		1425.8	7.11	•	
974 0		7244	S			V 70	35005	35873
974 0	TAR 1	7250		N (114.0	74.0	1 4 80	1385
974	OSMOS 64	7266	10007	23 APR	113.7		1478	1317
	DEMOS 64	7267	USSR	ا س	114.1	74.0	1480	1350
		7268	USSR	(H)	113.9	74.0	1480	1332
	COSMON WAY	7269	USSR	w	114.3	74.0	1480	1366
1974 0240	COSMOS 646	7270	USSR	W	114.7	74.0	1482	1401
1974 0246	(I)	7271	USSR	U	114.9	74.0	1481	1420
974 0	COSMOS 648	7272	USSR		115.1	74.0	, m	1
974 0		7273	ഗ	·) ·	P 4	00 00 00 00 40 0	853
0	METEOR	7274			1000	81.2	916	831
02		7275		7 × 7 × 7 × 7 × 7 × 7 × 7 × 7 × 7 × 7 ×	V20-1	62.6	37093	173
974 02	MOLNIYA 2-9	7777	CSSR	0 0	• •	63.0	40745	262
214 02	000000000000	7291	USSR		13.	•	1399	1 365
1974 0285		7284	USSR		113.2	74.0	1387	1361
974 02	رن 0	7291	S		03.	. 5	• 93.6 • 03.6	0 1
974 03	65	7297	USSR	. >	•	04.0	1201	36216
	SMS 1	7238	SO	17 MAY	1400-3	12.4	C	

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177 174	DESIGNATION	NAME	CATALOG	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-	APOGEE KM•	PERIGEE	TRANSMITTING FREG. (MHZ)
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NOTES

INTER-NATIONAL DESIGNATION

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95	1005	115.0	103.6	9 APR	Sn	10730			ے
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864	933	65.6	103.0	-	USSR	7727	72	COSMOS	٥ ،
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1478	1533	74.0	116.1	П	USSR	7634		SCMSOS	
1477	1511	74.0	115.9	71	USSR	7633		COSMOS	1975 016F
1467	1502	74.0	115.7	71	USSR	7682		COSMOS	
1442	1489	74.0	115.2	m	USSR	7681		COSMOS	٥ (
1394	1485	74.0	114.7	m	USSR	7690		COSMOS	
1409	1487	74.0	114.9	ħ	USSR	7679	7	COSMOS	
1459	1491	74.0	115.4	m	USSR	7678	711	COSMOS	
1363	1396	69.2	113.3	2 FE	USSR	7665			0
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798	1077	49.8	103.8	'n	FRANCE	7655			
797	1072	49.8	103.7	TH.	FRANCE	7654			
108	1129	49.8	104.4	FE	FRANCE	7647			
806	1107	49.8	104.2	E)	FRANCE	7546	TTE	STARLETTE	
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390	37055	12.8	659.6		S	9330			574 101G
35854	35887	9.7	1440.4	19 DEC	FR/FRG	7578	NIE-A	SYMPHONIE	
812	906	81.2	102.1		USSR	7575			
842			102.1		USSR	7574		METEOR	0
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975 LAUNCHES (CONT.) 975 CLAUNCHES (CONT.) 9	DESIGNATION		NUMBER			PERIOD	INCLI- NATION	UΣ	PERIGEE KM.	TRANSMITTIN FREG. (MHZ)
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100 100	975 0	ARIABAT	7752	AIGNI	⋖	•	50.7	480	466	
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777 0 150	מיני ל		7769	USSR	N	4	83.0	966	970	
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916		9411	USSR		731.1	63.0	40289	718	
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73 1976 02		13753	SO		:	•	35494	35484	
1976	CUSMDS 908	8754	USSR	16 MAR	95.2	81.2	54 O	517	
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1376 029	RCA SATCOM II	77	SO OS	¥ (000	'n.	36503	00000	
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1976 LAUNCHES (CONT.)

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15 (F)	35.064	4 6	1430.2	ב ק ב	3 5 C	I NOWS A	9009	22.) C	101
4		70 201	12 E MEN		, N	ביינו	- FO CO			0/61
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74.7	740	7, 4	100.0) V		4269			0161
773	704	7	n -			2002	27.60	000		
776	74 - 1 805 CCCMCM10 WO - MAIN AIRE		100.7		0 C	1000	EC08			1070
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	AVAILABLE		ויי האהצוס		20	, _C	8916			1976
1985	1686	74.0	117.9		15	บรรณ	8897			1976
1481	1517	74.0	116.0		15	USSR	8896	COSMOS 832	0	1976
1473	1505	74.0	115.7	S C N	15	USSR	8895	COSMOS 831	76 0546	197
1465	1491	74.0	115.5	Č.	15	USSR	8894	COSMOS 830	76 054F	197
1448	1489	74.0	115.3	CN	15	USSR	8893	COSMOS 829	76 054E	197
1431	1487	74.0	115.1	Č	15	USSR	8892			197
1411	1487	74.0	114.9	Č	15	USSR	8831	COSMOS 827	76 054C	1976
1480	1542	74.0	116.2		15	USSR	8890	COSMOS 826	6 0548	1976
1393	1485	74.0	114.6	JUN JUN	15	USSR	8889	COSMOS 825	6 054A	1976
291	28683	25.4	499.9	L L	10	Sn	0168		76 053F	197
35780	35794	7.3	1436.1	J CN	10	SO	8882	MARISAT 2		1976
965	1000	83.0	104.8	J U N	2	USSR	8874			1976
972	1004	83.0	104.9	CN	2	USSR	8873	COSMOS 823	6 051A	1976
TAINED	z	T ELEMENTS	CURRENT	Š	2	SU	8872		6 050B	1976
TAINED			CURRENT	CN	2	Sn	8871		6 050A	1976
938	1016	100.1	104.6	MAY	22	Sn	8868		76 0470	197
1000	1113	99.2	106.3	MAY	22	SO	8857			1976
985	1048	99.6	105.5	X Y	22	SO	8861		6 0478	1976
984	1047	99.6	105.5		22	SN	8860	P 76-5		1976
827	906	81.2	102.3		15	USSR	8846		Ċ	1976
326	887	81.3	102.1		15	USSR	8845	METEOR		1976
675	36207	21.6	648.6	W A Y	13	Sn	8840		c	1976
35901	35923	5.7	1442.5		13	Sn	8838	COMSTAR 1		1976
111	39885	61.9	710.5	MAY	12	USSR	8844			1976
93	37590	62.0	664.3		12	USSR	8933	MOLNIYA 3-5		1976
289	2655	110.0	115.4	YAY	4	SN	14514		0	1976
5837	5941	109.9	225.4	MAY	4	SU	8822			1976
283	2030	109.6	108.5	MAY	4	SO	8821		0	1976
5837	5946	09.9	225.4		4	SU	8820	LAGEOS	0	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	9996		0	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	9736		c	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	8894	SSU- 3	0	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	8859			1976
	AVAILABLE	207	ELEMENTS		30	SU	8843			1976
	AVAILABLE	NOT	ELEMENTS		30	SO	8842		6	1976
	AVAILABLE	20T	ELEMENTS		30	SU	8839		c	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	8836	S-US	0	1976
	AVAILABLE	NOT	ELEMENTS		30	SU	8835	SSU-1	0	1976
	-		ELEMENTS		30	SO	8819		0	1976
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35779	35794	8.0	1436.1	APR	22	NATO	8.808	NATO III-A	76 035A	197

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. I	PERIOD Minutes		365.6	5	SEE NOT		100.5	100.4	6.66	100.7	104.8	104.7	1436.0	646.3	684.2			104.6	104.5	CURRENT	CURRENT	94.3	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	1436.5	1436.3	100.6	100.5	100.6	· ·	1446.1	100-1	102.4	104.3	102.7	104.2			1436.5	1419.3	104.7	104.6	CURRENT	717.5	731.9	114.6	
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INTER-	NATIONAL DESIGNATION	1976 LAUNCHES	1976 0660	2 6		06781		9 9	o c						1976 074E	1976 077A	1976 0778 -	1976 078A			1976 0808			1976 0918					1976 092F		1976 0988	1976 098C					9201 9/61	1976 1035	-	-	-	٠ -	•	,	٠	-	•		_	•

		1633	39463	64.0	732.9	24 MAR	USSR	9927		120 1161
		993	39356	63.7	717.7	4	USSR	9880	MULNITA 1-30	1
		35763	35798	10.8	1435.8	0	I NDNSA	9862	N	717
		500	579	81.2	95.4	0	USSR	9854		
		493	513	81.2	94.7		USSR	9853	COSMOS 895	
		TAINED	S NOT MAINTAINED	ELEMENT	CURRENT	(M	JAPAN	9859) ; ;	
		35787		8.9	1436.2	u	JAPAN	9852	KIKU 2	
		969	991	83.0	104.7		USSR	9848		
		964	1007	82.9	104.8	_	USSR	9846	COSMOS 894	
		627	3918	65.4	133.5	19 FEB	JAPAN	19314		1977 012L
		792	3730	65.8	133.2	19 FEB	JAPAN	13133		0
		813	3785	65.3	134.1	19 FEB	JAPAN	12857		٥
		815	3793	65.6	134.2	19 FEB	JAPAN	9983		0
		777	3779	65.9	133.6	19 FEB	JAPAN	9982		
		785	3765	65.2	133.4	19 FEB	JAPAN	9981		٥
		802	3796	65.7	134.1	19 FEB	JAPAN	9843		
		803	3799	65.8	134.1	19 FEB	JAPAN	9841	TANSET 3	
		1810	39195	64 • 1	731.0		USSR	9850		
		1166	39181	63.7	717.6		USSR	9829	MOLNIYA 2-17	
			AVAILABLE	NOT	ELEMENTS	_	SO	9856	•	
			AVAILABLE	NOT	ELEMENTS		SO	9855		
			/AILABLE	NOT	ELEMENTS		SO	9803		
		TAINED	S NOT MAINTAINED	EL EME	CURRENT		S	9811		
		MAINTAINED			CURRENT	28 JAN	SO	9810		
		MAINTAINED	S NOT		CURRENT		SO	9809		
		619	1265	28.0	103.9		SO	9786		
		35758	35811	7.6	1436.0		NATO	9785	NATO ILITE	
		976	998	83.0	104.8	20 JAN	USSR	9738	:	
		976	1012	83.0	105.0	20 JAN	USSR	9737	COSMOS 890	
		881	895	81.3	102.7	5 JAN	USSR	9664		
		881	892	81.3	102.7		USSR	9663		
		853	931	81.3	102.8	-	USSR	9662		7.7.6
		878	895	81.3	102.7	6 JAN	USSR	9661	METEOR 2-2	977
									ies .	1977 LAUNCHE
		947	996	82.9	104.5	00	USSR	9638		1976 1288
		944	1012	82.9	104.7	28 DEC	USSR	9637	COSMOS 887	-
,		305		62.4			USSR	9635	MOLNIYA 3-6	1976 127A
Σ Λ.			υ \$}	(A)	SEE NOT		USSR		-	1976 1268 -
		را د د د د د د د د د د د د د د د د د د د	2306	6 5.8	114.8	27 DEC	USSR	9634	COSMOS 886	_
		O .	997	الدا	104.6	J	USSR	9613		1976 1228
4		937		83.0			USSR	9610	COSMOS 883	1976 122A
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		140		7 6	•	7 050	HSSB	0508		976
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		1	7	74-0	115.7	0	USSR	9591	COSMOS 874	1976 118D
									HES (CONT.)	1976 LAUNCHES
NOTES	FREQ. (MHZ)	*	X	NATION	MINUTES	LAUNCH	SOURCE	NUMBER	NAME	DESIGNATION
	TRANSMITTING	PERIGEE	APOGEE	INCLI-	PERIOD			CATALOG		NATIONAL
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1977 CAMPA WETCOR 1977 CAMPA W	DESIGNATION		NAME	CAT ALOG NUMBER	SOURCE	LAUNCH	PERIOD Minutes	INCLI- NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTIN FREG. (MHZ)
1777 178.4 WETEDR 0.990 U.SSR 5 APR 110.2.3 0.1.2 0.0.2 0.	977 L	S (C	•								
1977 0.246	420 LL5	7		9903	USSR	¥	02.	_	887	846	
1777 1754 1754 1754 1754 1754 1755	50 775	an i		4066	USSR		02.	81.3	912	833	
177 0.276 0.276 0.276 0.276 0.277	20 77	2000	100	1000	2000	n -	103.1	82.9	932	9880	
1777 0.274 0.254				1166	200	٠.	0 1 1 1	01	* 1000	0000	
1977 0294 ESA - GEOS 9931 ESA 20 pts 734.2 777 39366 777 7931 777 0294 779	50 77	a lo		10946	1000		u a	7.70	S NOT MAT	4	
1977 0344 MCANIYA 3-7 9941 USSR 26 APR 717-7 93-7 93-15 93-1	920 LL		Ş	9931	ESA			27.7	38367	:	
1977 344 1981 1982 1	0		3.	9941	USSR	0	717.7	63.7	39315	1033	
1977 0346 1970	ဂ	•		10000	ns	~	1489.6	9.5	36902	36752	
1977 0346	0	9		10001	ns	2	1509.1	8.8	37362	37043	
1977 0346	0			10002	SO	8	507.	4.6	38399	35924	
1977 0366 1977 0446 1977 0	0	COSMO	606	10010	USSR	0	7	S	2103	686	
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1977 0446	0	INTELS	T 44 T	10024	1150	9	44		36068	6	
1977 0446	0			10025	NS	9	48.	21.2	36268	605	
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1977 0440 1977 0540 1977 0	0 776			10034	s :		ELEME	S	/AILABLE		
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CATALOG NUMBER SOURCE LAUNCH

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APOGEE

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NOTES

INTER-NATIONAL DESIGNATION

NAME

ATATATO	NOT I		CURRENT	- X Y	_	SU	10857			•
1571	3527	27.9	139.9		_	S	10856			2
35779	35801	6.1	1436.2		11	ESA	10855	015-2		1978
680	686	98.3	98.4	MAY	مبر	SU	10854			19
662	675	98.3	98.1	MAY	_	SU	10853			19
794	807	98.6	100.9	MAY	_	Sn	10820			19
250	11687	26.9	227.6	APR		SU	10794		78 0390	1978
572	1979	28.2	111.1	APR	7	SO	10793			•
33775	37702	\$ • 5	1433.7	APR	ن-	JAPAN	10792	YURI	1978 039A	19
TAINED	NOT MAINTAINED	ELEMENTS	CURRENT	APR	-1	SN	10788		978 0388	19
MAINTAINED	NO.		CURRENT	APR	.	Sn	10787		1978 038A	19
595	3620	21.7	648.2	MAR	31	Sn	10779		78 0358	1978
35631	35983	1.9	1437.2	X AR	31	ITSO	10778	INTELSAT 4A F-6	978 035A	1 9
956	993	82.9	104.6	MAR	31	USSR	10777		978 0348	19
955	1006	82.9	104.7	MAR	31	USSR	10776	COSMOS 1000	978 034A	19
945	995	82.9	104.5	MAR	28	USSR	10745		978 0318	19
949	1003	-	104.6	MAR	28	USSR	10744	COSMOS 996	978 031A	9
	AVAILABLE		ELEMENTS NOT	MAR	16	Sn	10734		978 0298	19
968	994	82.9	104.7		15	USSR	10732		978 0288	9
971	1005	82.9	104.9	MAR	15	USSR	10731	COSMOS 994		9
762	882	98.6	101.3	MAR	ران دان	USSR	20029		1978 026HS	19
	#	E 28	SEE NOTE	MAR	U1	SO		- 026HT	978 026C -	19
895	905	99.0	103.0	-	ران ا	SN	10703	AMSAT+OSCAR-8	978 0268	6
895	918	98.8	103.1		ران د	S	10702	LANDSAT 3	978 026A	9
674		62.3	729.0		2	USSR	10803		978 0240	9
654	39703	62.0	717.8		2	USSR	10696	MOLNIYA 1-39		9.
959	989	83.0	104.6		28	USSR	10693			9
951	100	83.0	104.6		28	USSR	10692	COSMOS 991		9
MAINTAINED	NOT	ELEMENTS	CURRENT		25	SO	10689			2
MAINTAINED	NOT	ELEMENTS	CURRENT		25	SO	10688			19
671	Ø	63.7	251.1		22	SO	18598			9
714	₽	63.9	268.4		22	S	10801			9
19872	20491	63.7	718.0		22	SU	10684			1978
765	789	74.1	100-4		17	USSR	18501			9
763	786	74.1	100.4		17	USSR	13500			9
741	754	74.0	99.8		17	USSR	14803			9
761	785	74.0	100.3		17	USSR	10677			9
768	794	74.0	100.5		17	USSR	10676	COSMOS 990		1978
970	1288	69.2	107.9		16	LADAN	13132			1978
974		69.4	107.1		16	LADAZ	10675			9
974		69.4	107.2	711	16	LAUAN	10674	UME 2		1978
261		26.5	216.5	'n	۰	SO	12908		0	1978
35770		9.2	1436.0	70	۰	SO	10669	FLTSATCOM 1		9
650	3887	65.9	133.4	- -Th	4	LADAN	12406		0	1978
628	3868	64.8	132.9	- -	₽	JAPAN	12331		0	9
632	3965	65.4	134.1	FEB	•	JAPAN	12330			1978
643	3936	65 • 3	133.9	FEB	4	JAPAN	12329		978 014C	15
636	9	65.4	134.1		•	JAPAN	10664	KYDKKO	78 014A	9
315	472	29.6	612.8		26	SU	10723		0	9
	40000	1.75	14.00.4	ZAZ	07	S	10037	301	V210 B1	9

1970 0.489	NATIONAL Designation	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PER10D MINUTES	INCLI- NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREG.(MHZ)
10,000 1	818									
10 10 10 10 10 10 10 10	978 0	100	0.8	USSR		95.8	81.2	567	547	
100 100	978 0			USSR		96.5	81.2	622	558	
100 10 10 10 10 10 10 1	ט מרט			s i		718.0	9.49	20615	19750	
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10012 USS US	 		5	n o		Σ	S	AILABLE		
928 0550 MOLNIYA 11-40 10917 USSR 23 MY 104.6 82.9 999 999 973 0558 MOLNIYA 11-40 10925 USSR 23 MY 712.7 9 63.5 9919 1199 999 999 999 999 999 999 999	8 051			ns	Į		U	€		
978 0564 MOLNIYA 1-40 10946 USSR 23 UNY 717.7 61.3 9651 1999 0999 0999 0566 COSMOS 101.4 10949 USSR 2 UNY 717.7 61.3 9651 1999 1999 0566 COSMOS 101.4 10931 USSR 7 UNY 116.1 74.0 15.2 15.2 14.4 1999 0566 COSMOS 101.4 10931 USSR 7 UNY 116.1 74.0 15.2 15.2 14.4 1999 0566 COSMOS 101.4 10931 USSR 7 UNY 116.1 74.0 15.2 15.2 14.4 1999 0566 COSMOS 101.4 105.2 USSR 7 UNY 115.4 74.0 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	8 053			S		04.7	٥	100	953	
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918 056E COSMOS 1016 10034 USSR 7 JUN 115.6 74.0 1496 1486 1486 1486 1486 1486 1486 1486 148	978 05	SM35 101		USSR		S	74.0	1514	1472	
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978 0623 GDES 3 10954 US 16 JUN 1446.0 6.7 35808 3578 0528 0623 10954 US 12 JUN 100.5 74.1 790 779 779 0538 0539 0539 0539 0539 0539 0539 0539 0539	0 816			O.S	0	CURRE		NOT	VIAINED	
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99.2 74.0 73.2 71 97.8 0.346 USSR 21 JUN 100.6 74.0 73.2 77 97.8 0.64A SEASAT I 10967 USSR 27 JUN 100.6 74.1 80.2 77 97.8 0.64A CDSMOS 10.25 10970 USSR 28 JUN 720.3 67.9 36.45 55.8 97.8 0.65A CDSMOS 10.25 10974 USSR 28 JUN 720.3 67.9 36.45 55.8 97.8 0.65A CDSMOS 10.25 10974 USSR 29 JUN 97.3 62.5 60.3 56.4 61.9 97.8 0.65A COMSTAR 3 10976 USSR 29 JUN 97.3 62.5 60.4 60.4 61.0 97.8 0.63A COMSTAR 3 10976 USSR 14 JUL 449.3 9.9 36.17 36.17 36.17 36.17 36.17 36.17 36.17 36.17 36.17	0 872			USSR		0	74.1	789	753	
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024D COSMOS 1084 11299 USSR 15 MAR 115.1 74.0 1462 1 024E COSMOS 1085 11300 USSR 15 MAR 115.4 74.0 1501 1 024F COSMOS 1086 11301 USSR 15 MAR 115.4 74.0 1480 1 024G COSMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 024H COSMOS 1088 11304 USSR 15 MAR 116.1 74.0 1594 1 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 11306 US 16 MAR ELEMENTS NOT AVAILABLE	0246 C0SMOS 1084 11299 USSR 15 MAR 115.1 74.0 1462 11 024E C0SMOS 1085 11300 USSR 15 MAR 115.6 74.0 1501 11 024F C0SMOS 1086 11301 USSR 15 MAR 115.4 74.0 1480 11 024G C0SMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 11 024J C0SMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 11 024J 11304 USSR 15 MAR 116.1 74.0 1698 11 025B 11306 US 16 MAR ELEMENTS NOT AVAILABLE	024C C0SM0S 1	298	USSR	ß	14	•	1463	1440		
024E C0SM0S 1085 11300 USSR 15 MAR 115.6 74.0 1501 1 024F C0SM0S 1086 11301 USSR 15 MAR 115.4 74.0 1480 1 024G C0SM0S 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 024H C0SM0S 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 025B 11306 US 16 MAR ELEMENTS NOT AVAILABLE	024E C0SM05 1085 11300 USSR 15 MAR 115.6 74.0 1501 1 024F C0SM05 1086 11301 USSR 15 MAR 115.4 74.0 1480 1 024G C0SM05 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 024J C0SM05 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 11304 USSR 15 MAR 116.1 74.0 1598 1 025B 16 MAR ELEMENTS NOT AVAILABLE	024D COSMOS 1	599	USSR	ເດ	15	•	1462	1459		
9 024F COSMOS 1086 11301 USSR 15 MAR 115.4 74.0 1480 1 9 024G COSMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 9 025B 15 MAR 117.6 74.0	9 024F COSMOS 1086 11301 USSR 15 MAR 115.4 74.0 1480 1 9 024G COSMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 11306 US 16 MAR ELEMENTS NOT AVAILABLE	024E COSMOS 1	300	USSR	S	S.	•	1501	1464		
9 0246 COSMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 9 0258 16 MAR ELEMENTS NOT AVAILABLE	9 0246 COSMOS 1087 11302 USSR 15 MAR 115.8 74.0 1522 1 9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 11306 US 16 MAR ELEMENTS NOT AVAILABLE - 39-	024F COSMOS 1	_	USSR	S	15.		1480	1463		
9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 1 9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 9 0258 16 MAR ELEMENTS NOT AVAILABLE	9 024H COSMOS 1088 11303 USSR 15 MAR 116.1 74.0 1544 11 9 024J	9 0 2 4 G COSMOS 1	a	USSR	ß	15		1522	1463		
9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 9 0258 16 MAR ELEMENTS NOT AVAILABLE	9 024J 11304 USSR 15 MAR 117.6 74.0 1698 1 11306 US 16 MAR ELEMENTS NOT AVAILABLE - 39-	9 024H COSMOS 1	303	USSR	S	16		1544	1464		
9 0258 16 MAR ELEMENTS NOT AVAILA	9 0258 11306 US 16 MAR ELEMENTS NOT AVAILA	9 0243	11304	USSR	ស	17.	•	1698	1458		
		9 02	11306	OS	ø	EME	NTS NOT	AILA			
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NOTES

P k		OBJECTS	IS IN ORBIT	11				
DESIGNATION NAME	CATALOG NUMBER SO	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-	APOGEE KM.	PERIGEE KM-	TRANSMITTING FREQ.(WHZ)
1979 LAUNCHES (CONT.)								
1979 026A COSMOS 1089	11308 U	S	21 MAR	104.7	83.0	997	966	
1979 0288 COSMOS 1091	11309 U	USSR	7 APR	104-6	83.0	1005	962 961	
0288		S	7 APR	104.7	82.9	991	965	
		USSR	-	104.7	82.9	1002	960	
0308	1327	USSR	ر		82.9	997	956	
1979 031A MULNITA 1-43	155	USSR	I A ATR	671-0	64-1	37931	o (
1979 032A COSMOS 1093			14 APR	95.0	81.2	OF VOICE	540	
0328				96.3	81.2	622	542	
0		X)		1436.3	8.4	35805	35776	
0.35E		20		1437.5	9.0	35917	35709	
1979 038A FLISATION 2		ICCD CS		1430.2	5 0 0	35822	5770	
0468	11379	USSR	31 MAY	104.6	5	066	959	
047A		Ş		93.1	55.0	438	418	
048A		USSR		656.8	63.4	37174	127	
1979 0504	11389	COUR		ELEMENT	S NOT	AVAILABLE	221	
	11403	S		X m	NOT	AVAILABLE		
		S		ELEMENT	NOT	AVAILABLE		
1979 0506	11534	S	6 JUN	ELEMENTS	NOT .	AVAILABLE		
	11397	SO		ELEMENTS	NOT	AVAILABLE		
1979 053C	20364	SO	NO TON	ELEMENTS	2 0 0 0	AVAILABLE AVAILABLE		
	11416			100.9	98.5		791	
1979 0578	11419		27 JUN	99.9	98.4	757	752 768	
1979 058A COSMOS 1109	11417	USSR		CURRENT	EL 6	S	TAINED	
0580				721.7			2744	
1979 0586				715.1	67.3	37504	987A	
1979 0586	12909	USSR	27 JUN	719.6	68.2	39114	1329	
0				698.9	66.3	38251	1169	
058J				720.5	67.3	37953	2534	
1979 0608 CUSMUS IIIO	11427	USSR	28 JUN	100.7	74.0	798	766	
979 0				99.9	74.1	758	752	
979 0600				100.3	74.0	775	768	
1979 062A GURIZUNI 2	11940	USSR	יי ה פיי	1436.2	8.7	36558	36507	
979 0	1457	USSR		95.0	81.2	532	505	
979 0678		USSR		95.7	81.2	587	521	
		USSR		717.9	63.9	38114	2244	
1979 072A WESTAR 3	11484	US	10 AUG	1440.7	2.2	35911	35841	
979 077A COSMOS	_	USSR		716.5	68.2	35708	4583	
979		USSR			68.2	36122	4531	
1979 077E	12814	USSR	28 AUG	612.5	03.3	33209	1813	

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2	,			087	JECTS IN OR	ORBIT				
NATIONAL DESIGNAT	NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINÜTES	INCLI- NATION	APOGEE KM.	PERIGEE Km.	FRANSMITTING FREG. (MHZ)
1979	LAUNCHES	HES (CONT.)								•
1979	077F		12815	USSR	28 AUG	708.7	64.3	36960	2947	•
1979	0776		12816	USSR	60	86	63.6	36895	1904	
6261	H270	00000	12817	USSR	60	20	63.3	37929	2564	
	0788	COSMOS TIES	11510	USSR	28 406	100.7	74.0	800	781	
	078C		14805	USSR	9 00	9 6	74.0	7.50	75.1	
	07.60		14806	USSR	60	0	74.0	798	789	
626	0 7 8 E		18650	USSR	a 0	0	74.1	758	744	
67.51	4 7 8 0 0 0 8 8 0	COSMOS 1130	11538	USSR	ر ا	~	74.0	1478	1395	
070	0.460	COSMOS 1132	11539	2880	0 1	*	74.0	1480	1409	
615	0840		11541	3000	25 050	114.0	0.4	1480	1423	
616	084E		11542	asso.	ם ני	115.1	74.0	1481	1437	
616	084F		11543	USSR	<u>ب</u>	-	74.0	7041	1041	
	0846		11544	USSR	ם ו	5	74-0	1490	1 4	
1979	H 780	SM0S 113	11545	USSR	ıo	15.	74.0	1512	٠,	
615	0843		11546	USSR	ß	-	1-	1682	4	
616	086A		11558	SO		ELEMENT	S NOT	AILABLE		
616	086C		11560	Sn		ELEMENT	S NOT	AILABLE		
625	087A	EKRAN 4	_	USSR		43	8.6	35908	35691	
2 6	2/80		17939	USSR		1433.4	8.5	35819	35648	
		CUSMUS 1140	٠,	USSR		100.5	74.1	792	768	
	0890		11374	200	11 001	100.3	74.1	785	759	
616	0680		ts	8880	11 001	0.00	1.47	780	746	
	9680			USSR		100.4	74.0	107	263	
	0 9 0 A	COSMOS 1141	11585	USSR		104.6	82.9	866	952	
616	8060		11586	USSR		104.5	82.9	066	746	
	0 8 0 C		11587	USSR		103.1	82.9	922	885	
	091A	MOLNIYA 1-45	11589	USSR		717.9	63.4	39899	460	
on (0160		11602	USSR		732.2	63.9	40574	489	
070	4500	CUSMUS 1143	11600	USSR	26 OCT	96.2	81.2	588	267	
	0.95A	METEOR 2-5	11601	2002		4.06	81.2	617	554	
	8560		11608	11550	31 001	102.4	81.2	880	60 6 60 6	
	098A		11621	ns Os		1436.0	2.10	614	450	
O.	8860		11622	ns		1436-1	, m	35790	100 CBC	
	098C		11623	ns		1510.8	7.5	38505	35967	
o (60	COSMOS 1145	~	USSR		62.6	81.2	565	553	
	ο (4	ø	USSR		σ.	81.2	616	538	
0.00	101A		63	\supset	_	78	7.6	999	8202	
2000	4001	~	*	USSA	28 DEC	1435.2	8.2	35783	35755	
	100		11054	U55K	x 0	LC .	κ	630	36172	
1 989 1	LAUNCHES	ES								
1980	302A	MOLNIYA 1-46	11662	assn		9 7 3 4		0440	•	
980	002F		11570	USSR	247	732.7	0.00 6.40	0.0 to 0.	400	
980	003A	COSMOS 1150	11667	USSR		104.8	82.0	1011	*10T	
1580	9600		11668	USSR	NYO 41	104.7	82.9	966	9 60	
• ,,								1		

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CATALOG
NUMBER SOURCE LAUNCH

PERIOD MINUTES

INCLI-

APOGEE

PERIGEE

TRANSMITTING FREG. (MHZ)

NOTES

INTER-NATIONAL DESIGNATION

NAME

80 0	80.0	0	80 0	80 0	600	900	5 6	3	0 032	0 0308	_	0	0	80 02	80 0	80 026	80 0	80 0	800	0	0	0		0		0	0		0	0	0		012	0		0 1		80 012				,	9 6		9 6	9 0	80 005	80 005	1980 004A	1980 LAUNCHES
	GORIZONI 4		COSMOS 1184		COSMOS 1181		COSMOS 1176			BOAY	COSMOS 1174		COSMOS 1172			COSMOS 1171			COSMOS 1168										AYAME 2		RADUGA 6		5 116	116	s :	S 116	OSMOS 115	5 115)	0.8000 115				COSMOS 1154		COSMOS 1153		Ų,	FLTSATCOM 3	ES (CONT.)
11862	11841	11322	11821	11804	11803	11971	78	11791	11793		11765	11762	11758	11752	11751	11750	12404	11736	11735	11746	11745	11734	11733	11732	11731	11721	11720	11718	11715	11728	11708	11699	11698	11697	11696	11695	11694	11693	11692	_	11705	11690	11683		11681	11530	11672	11671	11659	
USSR	USSR	USSR	USSR	บรรล	USSR	USSR	บรรล	SU	S	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	SO	SO	Sn	SO	S	SO	SO	S	JAPAN	JAPAN	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	H25U	S	S	S	S	USSR	S	SS	บรรม	S	
14 JUN	14 JUN	A JUN	NON 4		20 MAY	29 APR	29 APR	26 APR	26 APR			12 APR		3 APR	3 APR	3 APR	17 MAR	17 MAR	17 MAR	3 MAR	3 MAR	3 MAR			JMAR	3 KAR				20 FEB	20 FEB		(1)	11 FEB	11 FE8	11 FEB	1 F	1 FE	1 FE	LI Li	EI FI	73	ے	ے	Q,			23 JAN	18 JAN	
1470-4	1460.0	96.7	96.2	104.7	104.8	103.1	103.4	241.0	717.9	Ш	8	722.1	718.0	104.8	104.6	104.8	103.6	104.6	104.7	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	ורת אות או	ELEMENTS	ELEMENTS	ELEMENT	355.9	1396.6	1475.1	1436.5	117.8	116.1	115.8	115.6	115.4	115.2	115.0	114.8	4	289.8	718.0	96.5	96.4	104.7	104.8	97.3	96.9	1436.2	
œ •	7.9	•	81.2	82.9	82.9	64.8	64.8	63.2	63.7)	66.1	•	65.1	65.8	0.00	65.8	82.9	ø	9	NOT	2	2	2	NO	2 2	2	S	24.4				•	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	63.5	64.2	81.2	81.2	82.9	82.9	2	82.5	٥. ٧	
36592	0	2002	, de	994	1003	942	963	N	18402	1		0	١ -	-	4004	1005	951	2001	1009	AVAILABLE	AVAILABLE	AVAILABLE	AVAILAGLE	AVALLAGEE	AVAILAGLE	**************************************	AVAILABLE	20276	36839	36606	35839			1517	1500	1481	1476	1474	1475	4	15759	20484	ú	588	00	1015	•	620		
01000	30239	1 C C C C	507	40.4	90	000	974	20.3	00761		201	701	0010	900	0 7 3	900	906	95.	9 0	1								747	32785	10400	30.00	1041	1400			. 6	1448	1432	1413	1396	495	19880	553	580	953	95	010	597	35/69	}

			36 80	OBJECTS IN OR	ORBIT				
INTER- National		CATALOG			PER I GD	INCLI-	APOGEE	PERIGEE	α
DEST GNATION	NAME	NOMBER	SOURCE	LAUNCH	MINUTES	NOILAN	Y X	I	FREG. (MHZ)
1980 LAUNCHES	HES (CONT.)								
1980 050A	COSMOS 1188	11844	USSR	14 JUN	717.6	67.4	36443	3900	
0		84	USSR		N	•	66	3925	
0	METEOR 1-30	8	USSR	18 JUN	6.46	7.76	533	493	
0		18	USSR			97.5	62	572	
0 086		~	⊃		ELEMENT	z v	AILABL		
	MOLNIYA 1-47	6	USSR		717.3	2.49	004	284	
0 080	:	9 6	v) (21 JUN	733.0	64.6	ø	417	
	CUSMUS 1190	11869	USSR	1 JUL	100.6	74.0	962	780	
9 0		201	2000	 	100.5	74.0	795	770	
1960 0567		9 6	3550		101.0	74.0	~ (793	
9 0	1011	14809	200	יי קלי	100.0	0.4	u	789	
,	6116	11011	2002			6.70	30000	S	
0		0001	8550	, c	· a	V . W	D P	2104	
0	COSMOS 1102	٠-	0001				ָרָר <u>רַ</u>	1077	
0.58	5	, (9000				1472	1013	
0 086		11877	asso		114.0	7.4	7	1 4	
0		11878	USSR		. 10	74.0	1473	4	
0		11879	USSR		115.3	74.0		46	
0	S	11880	USSR		115.5	74.0	14.80	1469	
0	S	11881	USSR		9	74.0	1506	1472	
0 086	COSMOS 1199	11882	USSR		116.0	74.0	1528	1471	
980		11883	กรรค	JUL 6	117.6	74.0	1680	1467	
1980 060A	EKRAN 5	11890	USSR	14 JUL	•	9.6	69711	1953	
980		14193	USSR		1417.3	8•0	35494	35340	
	MOLNIYA 3-13	11896	กรรห		17.	63.7	6	964	
2 6		11909	USSR	6 0 I	732.5	64.0	(C)	920	
1980 0098	CUSMUS 1200	11932	SSS	o i	96.2	81.2	579	r 1	
	WETFOR SEA	11955	2000	20 A C4	0 0 0	2.19	ກຸ	000 040	
086	u 2	-	2000 2000		102.2	91.0	900	0.00 0.00	
086	GDES 4	11964	Sn	0 SFD	1451.2	2	36216	84081	
085		11970	so Os		2254.5	2.0	723	391	
0	RADUGA 7	12003	USSR		1435.4	7.8	35795	35751	
180 085		5 5	USSR		1440.4	8.0	35944	579	
0 085	COSMOS 1217	12032	USSR		716.5	67.3	639	3901	
280 085	į	0	USSR		721.8	67.5	709	3455	
0 086	FLISATCOM 4	0	S :	31 OCT	1436.1	Q	8	ø	
0 0 0 0	•	12069	SO:		N	9		267	
1 980 0861	COSMUS ICCO	Ď	2000	2 2	0 10 0	0.00	81 7% 81	0	
0 0 0 0	22.00	12065	V 201		36.5	-	7570	ļ	
0 0 0 0	MOINIYA 1-48	12066	9551		, ,	6. 44	08/00	r.	
080	•	12070	2550		733.6	* *	- C C - C <	6001	
0 085	COSMOS 1222	12071	assn	, -	• 4	91.7	י ער ס	ָ מ	
0	! ! !	12072	USSR		, 6	91.2	1 K	יי פיני	
980	CDSMOS 1223	12078	USSR	. ~	718.1	67.7	36078	4291	
		12086	USSR		723.4	67.5	36653	97	
1980 097A	COSMOS 1225	12087	USSR	ß		82.9	Ω.	40	
1980 0978		12088	USSR	۵	4	2			

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CATALOG NUMBER SOURCE LAUNCH

PERIOD MINUTES

INCLI-

APOGEE

PERIGEE

TRANSMITTING FREQ. (MHZ)

INTER-NATIONAL DESIGNATION

NAME

1981	1981	10011100011000110001100011000110001100011000110001100011000110000	1861 1861 1861 1861 1861 1861 1861	• • • • • • • • • • • • • • • • • • •
021C 021C 022A 022B	016F 016G 016H 017A 0178 0178	009A 009A 013B 013A 013A 013A 016A	002A W 002B C 003B C 0066A C 000BA C 0	1008 C 1008 C
COSMOS 1250 COSMOS 1250 COSMOS 1251 COSMOS 1252	STRO A	>	MOLNIYA 3-14 COSMOS 1238 COSMOS 1241 COSMOS 1242	COSMOS 1228 COSMOS 1228 COSMOS 1229 COSMOS 1230 COSMOS 1231 COSMOS 1232 COSMOS 1233 COSMOS 1233 COSMOS 1235 COSMOS 1235 COSMOS 1235 COSMOS 1236 COSMOS 1236 COSMOS 1236 COSMOS 1236 COSMOS 1236
12320 12321 12321 12322	12985 12985 12992 12307 12308 12309	12155 12156 12159 12295 12787 12787 12297 12298	12134 12134 12139 12139 12149 12150 12151	12089 12445 12091 12099 12094 12107 12108 12110 12111 1211 1211 12111 12
U S S R R R R R R R R R R R R R R R R R			USSR USSR USSR USSR USSR USSR USSR USSR	1150 USSR USSR USSR USSR USSR USSR USSR USS
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			9 JAN 9 JAN 16 JAN 16 JAN 21 JAN 21 JAN 21 JAN 21 JAN	6 DEC 10 DEC 10 DEC 13 DEC 23 DEC 23 DEC 23 DEC 23 DEC 23 DEC 23 DEC 23 DEC 23 DEC 23 DEC 26 DEC 26 DEC
114.4	710.5 710.1 710.1 706.6 94.6 650.0	717.4 717.4 731.6 731.6 704.8 704.7	717.8 732.2 107.2 106.3 104.9 104.9	1436.1 233.0 104.6 104.6 104.6 ELEMENTS 114.6 114.6 114.6 114.6 114.6 114.6 114.6 114.6 114.6 114.6
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1861	105E		12920	USSR		9 6		95	90	
1961	106A	VENERA 13	12927	USSR	0	빞	RIC			
1961	107A		12930	SO		ELEMENT	NOT	AVAILABLE		
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1991	1 0 8 A	COSMOS 1317	12933	USSR	_	719.2	6.99	36	4243	
1861	1 080		12940	USSR	_	723.3	67.1	36737	3868	
1981	1 0 8E		14734	USSR	_	713.6	65.3	v	3438	
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	116E		12979	USSR	60	117.1	74.0	1618	47	
1961	116F		12980	USSR	6 0	117.0	74.0	1615	47	
	1166		12981	USSR	28 NOV	117.0	74.0	1610	1478	
	1 1 6H	CDSMDS 1327	12382	USSR	60	16.	74.0	1602	1478	
	1165		12983	บรรห	æ	117.5	74.0	1658	4	
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012A COSMOS 1339 13065 USSR 17 FEB 104.7 82.9 1012 013B COSMOS 1340 13067 USSR 17 FEB 104.7 82.9 1012 013B COSMOS 1340 13068 USSR 17 FEB 97.0 81.2 625 014A WESTAR 4 13068 USSR 19 FEB 97.0 81.2 625 015A MOLNIYA 1-53 13070 USSR 26 FEB 717.6 63.9 39351 1 016D 015A MOLNIYA 1-53 13070 USSR 26 FEB 717.6 63.9 39351 1 016D 015A MOLNIYA 1-53 13070 USSR 26 FEB 717.6 63.9 39351 1 016D 015A MOLNIYA 1-53 13070 USSR 26 FEB 717.6 63.9 39351 1 016D 015A MOLNIYA 1-53 13070 USSR 26 FEB 717.6 67.7 36388 019A 00RIZONT 5 13083 USSR 3 MAR 708.9 67.6 36042 35 019A 00RIZONT 5 13089 USSR 3 MAR 1436.1 0.9 35806 02A 00RIZONT 5 13089 USSR 15 MAR 1436.1 0.9 35806 02A 00RIZONT 5 13092 USSR 15 MAR 1450.1 0.9 36381 36 02A 00RIZONT 5 13092 USSR 15 MAR 1450.9 6.9 36381 36 02A 00RIZONT 5 13101 USSR 24 MAR 1450.9 6.9 36381 36 02A 00RIZONT 5 1311 USSR 24 MAR 11450.9 6.9 36381 36 02A 00RIZONT 5 1311 USSR 25 MAR 104.0 82.9 1002 02A 00SMOS 1346			14117	USSR		1425.9	6.8	35780	35394	
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982 0278	982		13120	USSR		97.0	81.2	633	596	
982 029A COSMOS 1348 13164 USSR 7 APR 719-1 66-2 36051 3 982 029D USSR 7 APR 719-1 66-2 36051 3 982 030A COSMOS 1349 13127 USSR 8 APR 104-8 82-9 1002 982 030B 13128 USSR 8 APR 104-7 82-9 1002 982 030B 1NSAT-1A 13129 INDIA 10 APR 1434-2 0.1 35936 35 982 031A INSAT-1A 13138 USSR 19 APR 92-4 51-6 395 982 037A COSMOS 1354 13148 USSR 28 APR 100-8 74-0 802 982 037B 1316 USSR 28 APR 100-6 74-0 798 982 037C 1316 13153 USSR 28 APR 101-0 74-0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97-2 81-2 642			13121	USSR		97.2	٠,	36375	590	
982 030A COSMOS 1349 13129 USSR 8 APR 104.8 82.9 1009 982 030B INSAT-1A 13129 INDIA 10 APR 1434.2 0.1 35936 982 031A INSAT-1A 13138 USSR 19 APR 10.6 395 982 037A COSMOS 1354 13148 USSR 28 APR 100.8 74.0 802 982 037B 1316 USSR 28 APR 100.6 74.0 798 982 037C 1356 13153 USSR 28 APR 101.0 74.0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	286		13124	USSR		719.1	00.2	36051	3688	
982 0308 13128 USSR 8 APR 104.7 82.9 1002 982 031A INSAT-1A 13129 INDIA 10 APR 1434.2 0.1 35936 35 982 033A SALVUT 7 13138 USSR 19 APR 92.4 51.6 395 982 037A COSMOS 1354 13148 USSR 28 APR 100.8 74.0 802 982 037C 1384 USSR 28 APR 100.6 74.0 798 982 037C 14811 USSR 28 APR 101.0 74.0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	282	DSMOS	13127	CSSR		104.8	82.9	1009	962	
982 031A INSAT-1A 13129 INDIA 10 APR 1434.2 0.1 35936 35 982 033A SALYUT 7 13138 USSR 19 APR 92.4 51.6 395 982 037A COSMOS 1354 13148 USSR 28 APR 100.8 74.0 802 982 037B 13149 USSR 28 APR 100.6 74.0 798 982 037C 14811 USSR 28 APR 101.0 74.0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	982		13128	USSR		104.7	2	1002	957	
982 033A SALYUT 7 13138 USSR 19 APR 92.4 51.6 595 982 037A COSMOS 1354 13148 USSR 28 APR 100.8 74.0 802 982 037B 13149 USSR 28 APR 100.6 74.0 798 982 037C 14811 USSR 28 APR 101.0 74.0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	982 0	-		VIONI		1434.2	0.1	35936	35562	
982 0378 CUSMUS 1334 13149 USSR 28 APR 100.6 74.0 798 982 037C 14811 USSR 28 APR 101.0 74.0 826 982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	982 0	7	13138	USSR		92.4	51.6	a 490 000 000	786	
982 037C	982 0	į	13149	USSR		100.6	74.0	798	776	
982 039A COSMOS 1356 13153 USSR 5 MAY 97.2 81.2 642	982		14811	USSR		101.0	74.0	826	789	
	982		13153	USSR		97.2		4	610	

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INTER-			OBJECT	NI S	ORBIT				
NATIONAL		CATALOG			000				
DESIGNATION	ON NAME		SOURCE	LAUNCH	MINUTES	NATION	APUGEE KM.	PERIGEE KM.	TRANSMITTING FREG. (MHZ)
1982 LAUN	AUNCHES (CONT.)								
CJ.		13154	- v	× ×	97.8	ă		,	
82 04	C0SM0S 135	13160	USSR	6 MAY		7.10	9241	202	
82 04	C05M0S 135	13161	ഗ		14.	74.0	1470	\$ \$ \$ \$ \$ \$	
82	COSMOS 135	13162	S		15.	74.0	1478	1410	
82 04	COSMOS 136	13163	S	6 MAY	10	74.0	1480	1400	
1982 040E	COSMOS 136	13164	USSR		10	74.0	1482	1450	
10 CE	COSTOS	13165	USSR		115.5	74.0	1493	1465	
1 6	00 1 50 M500	13166	USSR		115.7	74.0	1503	1472	
1982 0401	001 00400	13167	USSR	MA ∀	115.9	74.0	1522	1471	
1 6		13108	NSSU.	0	117.7	74.0		1470	
92.0	SAKE SEMBER	131/2	US 11000			S	I L A		
82.0	201	10170	USSK		103.6	65.1	978	882	
82.0	AART SOMEON	******	2002		103	•	964	870	
82		7110	200		1436.4	6. 4	35820	35763	
982 0	CAKE SOMPOR	\$11\$I	USSR	~ (1436.1	v	35828	35742	
0 680	200	0000	2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		717.3	65.3	36525	3805	
082	**************************************	3215	USSR		704.1	65.5	36303	3373	
982 0		3637	USSE.	00	17	64.8	Φ.	1474	
0.000	SEE SOMBOO	3633	USSR	80	732.2	65.0	39381	1680	
982 0	7	13241	USSR	NO S	8	74.0	805	784	
982 0		10304	3000	NO.	00	74.0	806	765	
32.0		0 0 0	200	אַר <u>י</u>	8	74.1	795	789	
982 0			2002	NO.	0	74.1	794	792	
982 0		60 d	3000	ו מסק	00	74.0	802	782	
0 6		010	2002	200	100.8	74.0	608	780	
982 0	CERT SUMSUU	20161	s c	NO.	00	74.1	804	777	
982	3	7 * *	2000	NOT I	0	64.9	955	929	
982 0	COSMOS 1375	0 10	2000	•	103.6	•	936	920	
982 0	•	607	USSB	2 2	105.0	65.8	-	981	
82 0	WESTAR 5	269	ns			د د	ا ا ا	1	
2	COSMOS 1378	7.1	USSR		٢) (10866	35777	
2		272	USSR	0	97.5	•	7 6	610	
0	COSMOS 1382	295	USSR	េស	718.5	67.6	360	120	
285			USSR	25 JUN	708.4		v v	0 6	
	CUSMOS 1383		USSR	•	105.2	82.9	1025	E 80	
1982 0881			บรรค		105.1	82.9	1027	016	
J 0	CUSMUS 1380		USSR	7 JUL	40	83.0	1006	948	
J 6	+		USSR	~	104.5	83.0	1008	931	
92 0	•		SO	9	8	98.1	701	697	
i c	٠.		USSR		-	74.0	1472	1391	
70 70	۸,		USSR	_	4	74.0	1473	1407	
ים מים	→ ·	377	25	_	114.9	74.0	1473	1424	
י פיס	CUSMUS 1391	379	SS	21 JUL	115.0	74.0	47	1440	
		379	S S	_	115.2	74.0	47	1457	
י מע	SOMS	390	SS	_	115.4	74.0	1481	1468	
10 28	SM05 13	381	55	21 JUL	115.6	74.0	1493	1472	
82 073	COSMOS 1395	82	S	21 JUL	115.8		1513	1472	
2 0 73		386	S	21 JUL	117.9	4	7	1462	
3 0	MOLNIYA 1-55	383	USSR	21 JUL	7.717	4	16	1185	

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	0	0	81.2	101.8	14 DEC	บรรล	13720		2 1	198
	804	9 4	01.0		14 DEC	USSR	13719		-	1 6 8
	796	B 0 8	0 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			CUUL	13/13	METEOR 2-9	2 11	198
	805		2	י פ		2007		· 115AJ	2 1158 -	861
		36#	NOTE		00	1000	č		2 1	199
	36475	36648	ڻ • 5	1475.9		9550	1 70 5 6	X 2000	^	1 4 0
	36354	36690	5.4	1473.9		USSR	1 3660			140
	282	36372	22.7	644-1		SU	1 7666		. ,	1007
	200	36410	22.9	644.9	11 NOV	SO	13658	,	. ,	
	10 m	35793	0.0	1436.0	12 NOV	CANADA	13652	2	٠,	100
	35778	20000) (c	1436.1	11 NOV	S	13651	SBS 3	_	1982
	25772	25.400				USSR	15528		_	1982
	777	799	74.0	٠,		0000	14227		_	1982
	601	616	74.0	9			10049		2 1098	1982
	768	797	74.0	100.5		1000	1000	CD2MD2 1420	_	1982
	772	803	74.0	100.6		115 SP	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-	100
	00004	36210	4.0	1449.1	30 OCT	CS	13643			
	0.40	10000		1430.1	30 OCT	S	13537		_	0
	19791	00000	> 4 - 0	7.00.2		S	13536			1982
	16008	n (n) \	r c	7.00.4		SO	13631	RCA SATCOM-V		1981
	35780	35796	0.0			2007	1 30 30		2 103E	1981
	35689	35818	6.0	1074.4			47001	GORTZONI 6		1982
	35730	35788	6.0	1434.7		0.00	70761			1981
	954	997	83.0	104.6		USSR	1 761 8	COUNTOU 1411		1982
	400	1006	83.0	104.7	19 OCT	USSR	13617	00000		. H
	1 TO TO	1000	04.1	672.9	12 OCT	USSR	13610			1097
	10040	10076	0.20	321.0		USSR	13609			1 9 8
	(AF	7007	100	312.0		USSR	13608			1982
	292	17464	50 · ·	31.0		USSK	13607	COSMOS 1415	100E	1982
	19062	19083	64.7	673.6	12001	ייינים מיינים מיינים	13506	14	1000	1982
	19055	19202	64.7	675.7		0000	17606			1982
	1 906 3	19073	64.7	673.3		0000	13603			1982
	883	966	64.8	103.6	2 007	0000	1 2 6 6 6	CONSTATE		1982
	890	995	64.8	103.9		ussa	13600			× C
	213	5721	24.4	149.9		SU	1 4 5 5 6			1 40 0
	35///	35799	0.3	1436.1		ITSO	13595	INTELSAT SE S		1 700
	1867	1498	82.6	115.8		USSR	1 3590	3	5 6	1007
	1404	1500	82.6	115.9	24 SEP	USSR	13589	COSMOS 1410		, . , .
	0220	50000	65.2	707.2	22 SEP	USSR	13591	,	- ·	1000
	3 0	30722	04.0	718.5	22 SEP	USSR	13585	COSMOS 1409	- ·	1080
	10446	00000	•	1422.2		USSR	14115			1 0 8 2
	35400	1 TO 40	1.0	1450.2		USSR	13554	MKRAN 9	0	1982
	4.0.7.E	1000	0.00	97.0	'n	USSR	13553		_	1982
	621	Э 4 Э 4	0 0	97.2	·	USSR	13552	COSMOS 1408	c,	1982
	611		, t	100.5	SE	JAPAN	14569		0	1982
	0 0	11.7		107.2	SE	JAPAN	13510		_	œ
	0 T T	, ACC 1	44.0	105.1	SE	JAPAN	13493		0878	1982
	997	1000		107.2	S	JAPAN	13492	ETS 3	087A	œ
	966	1 0 0 0	04.0	133.1	>	USSR	13446		8 5 6	1982
	1249	o v	4 4	0.17	_	USSR	13432	MOLNIYA 3-19	83A	œ
	205	0400E	\$ c	1.00.1		CANADA	13431	ANIK D-1	8 S A	نتن
	35778	ħ	0 1	7.16	· O	USSK	13403		798	9
	587	5 6	91.0	2 2		USUR	13402	COSMUS 1400	079A	œ
	004	707	B C	0 4 0		USSR	13390		0740	1982
	1160	VEC 8	h >	•						
								S (CONT.)	LAUNCHE	1982
										0.0
FREQ.(MHZ)	大工	X I	NATION	MINUTES	LAUNCH	SOURCE	NUMBER	Z	ATIONAL	NATIONAL
TRANSMITTING	PERIGEE	APOGEE	INCL I -	068100					20	INTE

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INTER-			080	OBJECTS IN DR	08811				
NATIONAL DESIGNATION	ON NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI- NATION	APOGEE Km.	PERIGEE Km.	TRANSMITTING FREG. (MHZ)
1982 LAUNCHES	CHES (CONT.)								
982 1		17755	USSR	•	101.9	81.3	897	797	
1982 118A		13736	Sn	٥.	101.1	7.86	817	804	
1982 1188		13737	SO:	. .	99.2	98.6	720	716	
982 1		13738	s s	21 DEC 21 DEC	100.0	98.6	762	756	
		13774	Sn		99.2	98.6	725	716	
1983 LAUNCHE	CHES								
1983 001A	COSMOS 1428	13757	USSR	NAL SI	104.6	0, 08	.00	ć	
0		13758	USSR		•			* * *	
83 0		14568	USSR		03.	82.9	966	016	
E)	COSMOS	13761	USSR		115.8	74.0	1516	1464	
0 1	COSMOS	13762	USSR		115.6	74.0	1496	1465	
0 6	COSMOS	13763	USSR		15	74.0	4	1463	
0 0		13764	USSR		115.2	74.0	4	1461	
3200 5061		13765	USSR		ro.	74.0	4	1444	
2 6	SOMSOO	13763	2000	NAU 01	114.8	74.0	1465	1428	
) [SON SOL	19161	200		•	74.0	•	1412	
83 0		13769	8880		117.0	0.47	1404 COA+	1397	
83 0	COSMOS 1437	13770	USSR	20 JAN	97.1	81.2		9/41	
0 63		13771	USSR		97.2	81.2	099	588	
4400 CB54	IRAS	13777	SO:		102.9	0.66	406	886	
		13778	s o		102.3	1001	488	852	
9830	CS-2A	C0/C1	200			٠		1	
983 0	† •	13786	NAGAL	4 4 0 3 1 1	195.3	0 · d	00/00	487 GS	
83 0		13791	ns		ELEMENT	S NOT	AVAILABLE	γ .	
33 0		13792	SN		ELEMENT	S NOT	AVAILABLE		
83		13834	SO		ELEMENT	S NOT	AVAILABLE		
1983 008D		13835	S i	9 FEB	ELEMENT	S NOT	AVAILABLE		
		13844	s o		ELEMENT	S NOT	VAILABLE		
93.0		13840	S S	200	ELEMENT	S NOT	AVAILABLE		
83 00		13874	s o		FI FIRFINIT		AVAILABLE AVATIABIE		
83	COSMOS 1441	13818	USSR		6.96	81.1	615	606	
63		13819	USSR	16 FEB	97.1	81.1	658	576	
m 1	MOLNIYA 3-20	13875	USSR		717.3	0.49	38988	1344	
1983 013E	•	13682	USSR	11 MAR	731.9	63.9	39540	1510	
ייי ס מ	OI NEWS	13878	USSK	¥ :	1515.4	6.8	37484	37164	
) M	× × × × × × × × × × × × × × × × × × ×	0804	2550	12 MAR	1424.4	vo i	35603	35512	
) C		13690	2000	¥ :	720.6	63.7	38855	1638	
9 60	NOSTSA	13001	2000	TAM VC	732.0	63.8	39256	1828	
83		20413	2000	(<	09100	6 · 6 · 6	1/881/	25128	
O	COSMOS 1447	ייי י	USSR	24 MAR	104-7	0 0 0		7 0 4 0 F 70	
83.0		13917	S		104.6	82.9	•	n 49 104 104 104 104 104	
83 02	NOAA 8	92	ns	¥		60	822	797	
1983 0228		13924	ns	8 N	Ō	æ.		722	

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TRANSMITTING FREQ. (MHZ)

NTER- NTION NTION PSIGN 1082 1082 1082 1082 1082 1082 1082 1082	NAME ES (CONT.)	CATALOG NUMBER 14477	SOURCE US USSR	32 F 38 ≯	LAUNCH	AUNCH NINUTES NAR 98.9 NAR 104.7	
1983 023A 1983 0238 1983 025A	MOLNIYA 1-57	13949	USSR		2000	0 MAR 104. 2 APR 716.	2 MAR 104-6
	TORS 1	13969	C S			APR 1	APR 1
	1	13971			A P P P P P P P P P P P P P P P P P P P		APR 566-7
983	RADUGA 12	13974	USSR			APR 14	APR 1435.9 5.
983	RCA SATCOM VI	13984	US			1 APR 1436.	1 APR 1436.1 0.1 APR 120.9 25.
983	COSMOS 1452	13991	USSR			A DR	APR 100-7
1983 0318 1983 0310		13992 14812	USSR		12 APR	APR I	APR 101.0
585 585	ROHINI 3	14002 14032	INDIA		17 APR 23 APR		A PR
		14033	USSR		23 APR	APR	APR 97.5
1983 038A	CUSMUS 1450	14041	USSR			D 1	APR 707.3
1983 038H		14297	USSR		25 APR	A PR	APR 719
983	600mc	14306	USSR		25 APR		> ₽ ₽ ₽
	•	14051	S			אַ ס גע	APR 117.0 2
1983 0410		14196	SO		28 APR	APR	APR 201-1 23-
1983 0424	COSMOS 1459	14057	USSR		O MAY		# # ^ ^
		14064	USSR		7 MAY	MAY 99.0	# # A Y
1983 046A		14075	USSR			MAY 98.6	MAY 98.6 82.9
1983 047A 1983 048A	INTELSAT 5 F-6 COSMOS 1464	14077	USSR		24 MAY	HAY YAY	MAY 1430-1
		14085	USSR		26 MAY		# # A Y Y
0 (VENERA 1	14104	USSR			NUL	JUN HELIOCENTRIC
1983 054A	VENERA	14112	USSR		9 JUN 9	r c	r cz
0		14113	SU			JUN ELE	JUN ELEMENTS NOT
1983 056C		14143	us S		NOC 6	JUN ELE	JUN ELEMENTS NOT
		14145	S		NO CO	JUN ELE	
1983 0566		14180	S		-	JUN ELE	JUN ELEMENTS NOT
983	1	14181	SO			JUN 1436-1	JUN ELEMENTS
1983 058A	DSCAR 10	14128	FRG		NOF 91		JUN 699.5 25.
		14130	ESA		-	CZ	16 JUN 420-3 8-7

			OBJECTS	Z	08811					
INTER-										
DESIGNATION	I ON NAME	CATALOG	SOURCE	LAUNCH	PERIOD MINUTES	INCLI- NATION	APOGEE KM.	PERIGEE KM.	TRANSMITTING FREO.(MHZ)	NOTE
1983 LAUN	LAUNCHES (CONT.)									
1583 058E	114	17302	ESA	16 JAN	148.5	F7	5672	K		
0		17331	ESA		271.9	7.3	14698	349		
83.0	ANIK C2	14133	CANADA		1436.0	0.0	35791	35782		354
0 0	C PALAPA 81	14134	INDNSA	90	1436.2	0.1	35794	35781		35\$
1960 0591	•	14135	s i		618.0	23.4	34998	-		
9 0		14130	S 0		662.1	25.6	,	324		
, ,	A COSMOC 16.70	60 141	200		ELEMENIS	z	ורא ורא			
	0000	74141	2000		4.70	82.5	648	617		
9 6	1	14140	200		~ (82.5	657	623		
, 0		*67*1	n u	NO. 12	3	82.0	827	760		
2 6 0) t	14133	n u	NOC 22		0.28	825	757		
, ,		14555	٠ ا		0.001	82.4	7.78	739		
	A GALAXY 1	14153	۲ و د د		10101	61. 61.	855	761		
		07171	2 2		140041	o .	35/93	35782		
	A GORIZONI 7	14160	60		2,0,0	23.1	21222	215		
1483 066F		29191	ב ממט		C + 0 + 1	D • • •	6/505	36293		
F 60	, 4,	10141	2000		0.407	0.0	13629	218		
	0 20 20 00	14161	πι		1475.2		36600	36495		
	7089084	14103	X 0 0 0 0	1 JUL .	v.		NOT MAINTAINED	AINED		
0 0	20200	141/1	USSR		114.4	74.0	1461	1392		
	1 502500	7/141	2000		114.6	74.0	1461	1409		
		14173	2000			74.0	1460	1427		
0 60	1003403	4/141	2000	J =	6.61	0.6	1461	1444		
0 586	COSMOS	14175	2002) 	110.1	0.47	1463	1459		
983 0	COSMOS	14177	2001		115.5	0.4.0	1480	1460		
0 885	COSMOS	14178	4 6 6 C] = 0 Y	115.0	74.0	1400	0941		
0		14179	9550		417.4	0 0	1516	004.		
	A COSMOS 1481	14182	assn		707	64.5	1011			
		14191	USSR		708.0	67.6	3666	00 T F		
		14192	USSR		708.9	67.6	36754	3160		
83	T.	20412	USSR	8 JUL	705.8	67.6	36963	2797		
		14189	SN		717.4	63.3	20557	19780		
83		14190	Sn	14 JUL	371.8	63.7	20443	1055		
1983 073A	MOLNIYA	14199	USSR	19 JUL	624.6	64.0	34734	919		
	A COSMOS 1484	14207	USSR	24 JUL	7.96		630	572		
		14208	USSR		97.1	7.76	648	594		
683		14209	USSR	4	6.96	7.76	641	574		
		14229	USSR	4	97.4	7.16	664	507		
n 6	ut s	14631	USSR	4	9.96	9.76	929	585		
20 1	1	14928	USSR	4	97.1	7.16	647	595		
	A TELSTAR 3A	N	SO	c o	1436.2	0.0	35792	35783		
1961		14236	os O	œ	309.1		17352	178		
1983	_	423	S		CURRENT		NOT MAINTAINED	AINED		
1983		14238	ns	_	CURRENT		NOT MAINTAINED	AINED		
1983	COSMOS 1486	~	USSR		100.6	74.0	797	778		
ED (24	บรรห	3 AUG	100.6	74.1	795	773		
0 5851		14344	USSR		100.9	74.1	819	786		
5051		I	USSR	3 AUG	-		824	792		
2		15756	USSR	3 AUG	100.3	74.1	781	761		
Ú.										

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CATALOG PERIOD NUMBER SOURCE LAUNCH MINUTES

NATION

APOGEE

PERIGEE TRANSMITTING
KM. FREQ.(MHZ)

NOTES

INTER-NATIONAL DESIGNATION

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1983 126A	83 12	83 1	e3 1	83	1983 1208	ה ה	3 0								83 1	83 1	83 1	83 1	83 1	8.3	9 6	HEOT TOOK		83	90	83	83 1	9660	099A	098A	יות מיני	1983 091C -	83 0900	83 0		83 08	83 08	8 6	90.00	1980 0847	83 0840	83 0848	3 084A	83 081C	3 081A
COSMOS 1518		MOLNIYA 3-22		C05MOS 1515		CUSHOS 1513	6021	COSTONT	000000000000000000000000000000000000000	0 E 0 A	30 C 22 C 4 X 1 - 0 9	KOI NIKA 1+AO						COSMOS 1508			METEDR 2-10	00000	л Э (N451 5 4 1	COSMOS 1503		MKRAN 11		COSMOS 1500			BCA SATOM VII		MOLNIYA 3-21		INSAT 18		RADUGA 13			CH2802 1472	149	COSMOS 1490		CS-28
1004	ı U	14570	14552	14551	14547	14546	14548	14532	14522	14521	14520	14516	14610	14504	14555	14500	14484	14483	14454	14453	14452	14451	14450	16402	10441	14394	37	14373	14372	14365	32	14328	61001	14313	14524	14318	•	۵	14278	14277	14264	14209	14258	14287	14248
COOR	າທ	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	SO		- 0	. c	USSR	USSR	USSR	USSR	USSR	USSR	USSR	1150	מממא		USSR	USSR	USSR	Sn	S	US	I 0 0 0 X	USSE	S	VIONI	USSR	USSR	USSR	USSR	USSR	מממג	CSSR	JADAN	JAPAN
0	מים מים כ		ú		9 DEC		30 NOV		4						A NOV	NOV W			28 OCT		28 OCT		Ο,	19 001		12 001			8				31 AUG									10 406	IO AUG		5 AUG
(713.0	0.717	97.5	97.3	104.6	104.8	٠	•	•	116.0	•	716.2	100.2	99.8	99.5	7.101	- 0	108.0	•	101.2	101.2	104.5	104.7	1436.1	100.6	100.7	, o	0.70	97.3	1436.1	119.3	'n		7.017	3.6.7	1436.1	•	1466.9	•	(a) pur	•	676.8	6 A U • A	C - 10 C 7	7
	67.0	n #	· N	82.5	5	82.9	4.4	4.1	73.6	73.6	64.3	64.3	98.6	98.6	98.6	98.6	4.70	82.9	81.2	81.2	81.2	82.9	82.9	0	•	74.0	ار ان د		, ,	0.0	25.5	0.0		64.4	N A 4 0 1		4.9	٠	5	2	64.8	64.8	64.7	× 0	•
	37028	70127	7 C C C C	0 A 4 U	1010	1014	35981	36483	1519	1522	38410	ø	776	754	734	731	824	1703	. 88	894	881	999	-	35797	808	803	35671	T)	, v	35795	3013		384	40099	10101	35815	36628	36453	18558	18577	19156	19159	19080	19773	91205
	3136	1947	1830	010	941	955	35609	36234	1476	1477	1024	817	760	739	731	726	805	1 C C C C C C C C C C C C C C C C C C C	707	737	745	946	947	35777	765	782	35468	35771	633	35780	288	35729		918	0 10	95.05 90.105	36470	36319	925	388	19131	19154	18810	10085	40100

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NATIONAL DESIGNAT	NATIONAL Designation	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI- NATION	APOGEE Km.	PERIGEE KM.	TRANSMITTING FREG. (MHZ)
1983 6	LAUNCHES	ES (CONT.)								
983	126D		14596	USSR	80	705.5	66.9	36615	3129	
983	1274		14590	USSR	٥	675.7	0.99	19185	19073	
983	1278	SM0S 152	14591	USSR	Φ	675.7	0.99	19146	19112	
983	127C	COSMOS 1521	14592	USSR	0	m	0.99	19147	18994	
583	127F		14595	USSR	٥	m	0.99	19150	18975	
200	שלכן		14607	USSR	O (332.9	52.1	18762	0	
) D			86041	2550	29 DEC	o.	52.0	18927	323	
1984	LAUNCHES	ES								
	001A	COSMOS 1522	61	S		115.4	74.0	1491	1459	
	0018	_	14612	S		114.4	74.0	1459	1394	
	0010	_	61	S		114.6	74.0	1460	1410	
	0010	COSMOS 1525	6 1	USSR		•	74.0	4	1425	
	001E		14615	USSR	5 JAN	114.9	74.0	1459	1440	
#800	0011	- 1	14516	USSR		115.1	74.0	1460	1456	
	2100	COMOS	14617	USSR		115.3	74.0	1475	1459	
	100	SMUS 152	14618	USSR		115.6	74.0	1509	1459	
	7 5 6	1 E 21 3 ON 30 J	61041	2000		117.5	74.0	1679	1460	
984	8000	1	14024	2002	745	105.0	92.0	1008	976	
	005A	85-2A	14659	NAGAL		1453.8	7.1	2001	908	
	A700	CDSM05 1534	14668	USSR	26 JAN	•	65.8	378	- 10 2 10	
984	008A	PRC 14	14670	PRC		163.0	36.1	6536	479	
984	V600		14675	ns		CURRENT	ELEME	S NOT M	AINTAINED	
48 6	0000	:	14677	O.S		ELEMENT	S NOT	AVAILABLE		
# C	010A	COSMOS 1535	14679	USSR		0	83.0	1013	951	
9 6	8010		14680	USSR	2 FEB	104.6	83.0	1004	951	
****	0115		14693	s o		97.5	28.2	1005	274	
4 4 6	4210		46041	s u		0.0	27.1	1115	303	
460	40.00		06041	۲ ر د د			10N S	AVAILABLE		
480	0120		16041	٠ د د	יי קרות מור	CLCMEN.		AVAILABLE		
984	0120		14720	5 =		CLEMEN S		AVAILABLE		
	012F		14795	s o	5 FEB	ELEMENT	TON	AVAILABLE		
	0123		15347	ns		ELEMENTS	LON	AVAILABLE		
	012K		15348	ns		ELEMENTS	TON	AVAILABLE		
	012L		15349	SN		ELEMENT	LON	AILABLE		
984	013A	COSMOS 1536	14699	USSR	8 FEB	97.3			617	
40	0138		14 700	USSR		97.5	82.5	654	624	
984	016A	RADUGA 14	14725	USSR	2	1436.5	4.4	35803	35785	
986	016F		17874	USSR	S	1435.9	4.3	S.	rO.	
9 0	019A	COSMOS 1538	14759	USSR	_	100.6	74.0	804	773	
400	8610		14760	USSR		100.6	74.0	908	765	
	0190		15785	USSR	21 FEB	100.5	74.0	791	770	
986	0190		18519	USSR		100.5	4	792	169	
986	021A	LANDSAT 5	14780	ns	1 MAR	98.7	98.2	701	697	
40	0218	UOSAT 2	78	ž		8	8	682	499	
4	021C		_	S	1 MAR	95.0	1001	583	450	
1984	022A	COSMOS 1540	00	USSR	2 MAR	1436.3	5.1	35823	35757	

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TRANSMITTING FREQ.(MHZ)

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080	40.0			4	4		84	1984	984	984		984	84	984	984		9 4	0 4 0 4	4	9			984	984		1984 0		1984 0									1984 0	٠.		0	1984 0	84 0	8	984 0
0568	000	0000		0525	200	0526	052F	052E	0520	052C	0528	052A	0494	0 4 7 H	0476	047F	0470	0478	0400	404	0438	434) 4 1 E	410	414	378	358	35A	33D	AEE.	031F	0 3 1 2	290	29A	028F	028D	0284	378	0670	244	238	23A		22E
	CUSMUS		COSMOS			COSMOS							SPACENE					COMMOS		CORMOS		COSMOS 1			GORIZONT			PRC 15		COSMOS		CUSHUS		MOLNIYA			EKRAN 12	00100		COSMOS		INTELSAT		
	10/0		1004	n N	000	1505	1564	1563	1562	1561	1560	(J)	1				1556	7 F	я л •	1000	1	550			•					1547		1040	n h	1-60			. •	1044	n ▶	1541		G F = 8		
75025	15051	18030	12027	15000	15005	18004	15003	15002	15001	15000	14999	14998	14985	15054	15053	14984	14979	14978	14977	14975	14966	14965	14944	14943	14940	14931	14900	14899	14894	14884	14951	14897	14830	14825	513	14828	14821	14820	14810	14790		14786	14948	14789
2002	2007			בייטט ד	ממט		CSSR	USSR	USSR	USSR	USSR	USSR	SO	USSR	USSR	USSR	USSR	USSR	C 000 X	מממא	USSR	USSR	USSR	USSR	USSR	SO	בית סאל	PRC	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSB	מאמו	CVVR	ESA	1150	USSR	USSR
0						0) (X		28 MAY										I O MAY					22 APR		14 APR	0 A D D D		→ APR		29 MAR	29 MAR			o	O	0						2 MAR	2 MAR
10000	000	100.8	706.9	71 A . 1	117.7	1		115.0	115.2	115.4	115.5	115.7	1436.1	327.2	337.3	675.5	676.3	675.7	675.7	104	104.8	104.9	471.0	1460.1	1436.3	ELEMENTS NOT	OC F. FMFNTS	1435.2	706.6	718.8	1448.4	566.9	1436-0	717.2	1419.7	624.7	1499.1	97.5	97.3	2.00.5	554.3	1436.1	1441.8	635.7
7 * * *	70	74 . 1	500	A	74.0	74.0	74.0	74.0	74.0	74.0	74.0	74.0	0.0	52.1	52.1	66.0	66.0	66.0	66.0		80.0	83.0	49.1	4.2			NOT	2.9	67.5	67.5	5 . 4	45 3	* · · ·	64.8	5.6	•	J .	82.5	82.5	000	11.0	0.0	5.0	47.4
	802	804	36840	37447	1677	1473	14/4	14/4	1475	1483	1490	1508	35794	18417	19016	19172	19161	19153	19172	000	1000	1010	26940	36331	35810	AVAILABLE	AVATI ABI F	35792	37096	37603	36092	32280	35872	38391	35542	35418	37063	O ()	643	36860	31648	35809	35999	35994
j -	775	784	2975	2924	1473	1392	1 4 0 0	1400	1451	1459	1468	1469	35781	285	330	19076	19128	19105	19086	E 5 6	050	696	408	36178	35768		4	35745	2705	2801	35962	345	2000E	1934	35388	238	36958	624	615	400E	862	35766	35796	232

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ILV	NATIONAL		CATALOG			PER 100	I NCL I	APOGFF	DFOIGER	CHATTINGMENT
DESI	DESIGNATION	NAME	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	X X X	KH.	FRED. (MHZ)
1984	LAUNCHE	ES (CONT.)								
1984	0560		15757	USSR	NOT 80	40	74.0	9	į	
1984	0 29		15039	ns	13 JUN	7	63.1	\$80 \$200	20120	
1984	0		15040	ns		367.2	62.4	20741	44	
1984	0 62A	CDSMOS 1574	15055	USSR		104.8	83.0	1004	965	
700	9700		15056	USSR	21 JUN	104.7	83.0	166	096	
1089	9 0		15051	USSR		1435.6	4.1	35819	35733	
1984	, 0		15076	USSR		429.5	46.6	24780	174	
460) C		5,000	USSR		1394.2	3.9		34889	
1984	067A	777 SOMSON	10071	SO		u ,	ທີ	AILABL		
		•	17001	2000	NOC 22	4 (83.0	1008	954	
1984		COSMOS 1578	15080	USSR	NOT BC	0 0 0	93.0	200	958	
1984	0688		15081	USSB		2 4 6	.00	2611	285	
1594	V690	COSMOS 1579	15085	USSR		103.0	56.00	177	160	
1984	0		15330	USSR		103.6	1 2 2	000	800	
Ο,	069E		19453	USSR	29 JUN	103.1	9 60	906	\$ 0 00 \$ 0 00 \$ 0 00	
1984	071A	COSMOS 1581	15095	USSR		720.9	67.5	37519	2000	
1984	0710		15098	USSR	3 JUL	705.6	67.4	37064	26.00	
1984	072A	METEOR 2-11	15099	USSR	s JUL	104.0	82.5	957	937	
800	0728		15100	USSR		104.0	82.5	955	938	
# 0 0 0 0	A870	GURIZUNI 10	15144	USSR	1 AUG		3.8	35797	35773	
9 6 0 1	0704		15181	USSR		1436.9	3.7	35897	35709	
4 8 0	7670	COSMUS 1380	15147	USSR		717.9	64.3	_	2896	
1984	0804	۳ ان	15156	USSR	2 AUG	705.7	64.4	36899	2858	
1984	0.80		70101	JAPAN		1436.0	-	r.	35782	
1984	0.814	ر بر ل <u>ا</u>	10101	X 40 0	2 AUG	320.6	28.8	18066	208	
1984	0818	. H	15155	10 A 4 C C C C C C C C C C C C C C C C C C			0.0	v	541	
1984	081C		15168	T KANCE	_	1436.1	1.0	6	~	
1984	0810		٠.	4 o		157.8	•	6439	4	
1984	0.838 -	0834×	2	4000	9 V		6.5	3369	641	
1984	0.84A	COSMOS 1589	15171	1000	504	SEE NOTE	6	*		
1994	0848	; ;	15172	K 0 0 1	9 OF 6	6.611	82.6	1500	1489	
1984	085A	MOLNIYA 1-61	15182	USSB		110.0	0.4	1498	1488	
1984	0350		15198	USSR		0-01/		99019	058 850	
1984	0884	CCE	15199	ns.	o	0.00	0 4 4 7 8	61204	022.	
1984	0888	IRM	15200	FRG	9	2653.4	27.0	113818	9 9	
oco, ∘	088C	UKS	15201	ž		2659.6	26.9	113417	1002	
# 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0880		15202	US	16 AUG	134.1	28.9	4054	2 40	
D (UBBE		15205	ns		133.3	28.7	3981	552	
# C	1880		15206	SO	16 AUG	922.7	27.7	49610	424	
0	2880		19008	ns	16 AUG	132.6	28.7	3918	540	
0	0.000		19599	ns	16 AUG	133.4	28.7	3984	553	
# D D	4000	MULNIYA 1-62	15214	USSR	4	735.2	63.8	39109	2100	
0 0	7600		15223	USSR	4	738.9	63.8	38963	2429	
0 0	4 10 00 00 00 00 00 00 00 00 00 00 00 00	FRAN 13	15219	25	4		6.4	37093	695	
ם מ	4100		17875	USSR :	4	2	4.7	35596	35428	
9 0	0018		15226	s o	00	ELEMENTS	S NOT AV	4		
9 00		SBS 4	15227	SO I	_	ELEMENT	S NOT AV	AILA		
)		1	00701	s	31 AUG	1436.1	0.0	35795	35780	

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	784	793	99.0	100.6	12 DEC	US C	4	•	NO WEZ	84 12	9
	840	861	99.1	101.9	2 DE	<u>-</u>) 		. 3		
)	AVAILABLE	-	ELEME	-	ŞU	15423		000) v
	400		82.9	104.7	15 NOV	USSR	15399			_ ,	0
	204	500	83.0	104.8	15 NOV	USSR	15398	SMOS 1610	BA	_ ,	
)	10107	23.1	642.7	14 NOV	Sn	15402		150		0
	4 (0)	16177	21.5	115.9	•	SO	15392		Œ	_	1984
	674	7 1 17) n	140000	NOA W	NATO	15391	TO III-D	z	_	1984
	35771	30 A 40	- 0	1.810		ESA	15388		, 4 0	_	1994
	351	C909E		14000		ESA	15336	RECS 82	148 MARE	_	196
	35772	35799	2 .	1436.0		1 0	15385	E	4A SP	84 11	361
	35780	35790	0.0	1436-0		- C	0.400.1	ı		11	198
	294	14488	27.1	268.0		<u> </u>	1 5 0 0 0		50	+	
	320	35456	25.5	627.0		SO	15387	3	ָל לְּ		
	35070	35901	1.1	1436.0	10 NOV	SD	<u>;;</u>	ž,	4		٥ ،
	00774	35/92	0.0	1436-0	9 NOV	CANADA	15393	IX D2	H (4 1 1	0
	226	101	65.0	103.8	31 OCT	USSR	15503			-	0
	0 6	9 00	0.0	4	31 OCT	USSR	15378	COSMOS 1607	× 2	-	o.
	0 7	9 (•		USSK	15370		18	4 11	198
	621	654	201	07.5		C 0 0 7	10209	COSMOS 1606	11A CO:	4	198
	614	646	82.5	7	0	1000					1984
	1151	1197	90.0	108.9	v	213	1 5 1 5 1				
	945	1009	82.9	104.6		USSR	15360		,		
	940	1016	82.9	104.7	11 007	USSR	15359	DEMOS 1605	ז ר) v
	941	30.00	56.9	96.5	5 OCT	SO	15354	20.35	ח		1094
	A -	50750	ď	8	4 OCT	USSR	15355				1084
	2117	3/000	•	7	4 OCT	USSR	15350	SMOS 1604	7A COS		1984
	1014	1001	71.0	101.9		USSR	17358		56		1984
	9 4	0.00	00.0	101.7	28 SEP	USSR	15338		GF F		1984
	9 6	ם מ ת	00.0	101.5	SE	USSR	15335				1984
	8 G	n C	7.	101.4	5	USSR	15333	OSMOS 1603	Λ	_	1984
	8 1 N	10 C	7.00) (r	USSR	15332		58		1984
	5 V P	y (97.4	l lu	USSR	15331	OSMOS 1602	0	_	1984
	5	, A	J		0	USSK		ATI	4B - 104AF		1984
		- 1			י ני	20	15308	AXY 3		4 101A	1984
	35708	35867	2 (0 0 0 0 0	י מ	2007	15293		08		1984
	965	1001	82.9	104.8	0 10 10 10 10 10 10 10 10 10 10 10 10 10		1 0	SACT SON	DA COS		1984
	35779	35797	0.0	1436.1		1000	1007			4 0978	1984
	850	20487	63.6	1000	ים קור קור		17201		7 A		1984
	19952	20411	0. U	718.0		100	10010		50	0	1984
	2785	36846	66.8	703.2	7 SED	11000	15070	9661 608	SA CUS	c	984
	3029	37314	66.6		7 SEP	4550	15267)		486
	282	18896	51.8	•	•	USSP.	18266		. 6		49.6
	281	18741	51.9	332.2	4 SEP	3551	1 5 2 5 5		9		1 4 4
	19115	19152	64.7	675.9	4 SEP	USSR	15264		ič		v
	19085	19173	64.7	675.7	S	USSR	15261		5 6		4
	19141	19191	64.7	677.2		USSR	15250	0	6		4
	19084	19174	64.8	675.7	4 SEP	USSR	15259	MOS 1593	702	5 6	9 4
	351	36799	25.3	653.8	1 SEP	SU	15246		ล -	٠.	1 400
	342	34660	23.0	612.1	31 AUG	S	15245		ñ i	5 (, c
	304	14404	27.3	•	-	SO	15244			٠ د	1004
	35780	35795	0.0	1436.2	1 560	S	2	٠ ۲	4 () (9
	35780	35794	1.6		31 AUG	SO	15236	V-VI MCONY	NA S	0	0
								(CONT.)	LAUNCHES		1984
									'		
	3	7	NATION	MINUTES	LAUNCH	SOURCE	NUMBER	NAME	NOI	SIGNATION	1 S 3
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12 12 12 12 12 12 12 12	NATIONAL DESIGNATION		CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI- NATION		PEPIGEE Km.	TRANSMITTING FREG.(MHZ)
12.25 12.25 12.24 19.5 12.25 10.0.4 90.0 90.0 90.05 12.24 90.05 14.25 90.55 14.25 90.55 14.25 90.55	1984 LAUNC	S								
1244 HOLNITA 1-63 19439 USSR 14 OEC 71344 6134				ns		100.4	0	782	768	
1240 1240 1543 1958 14 DEC 733.4 63.4 38866 1240 124	984	1-6	15429	USSR		718.1	63.2	38333	2035	
1250 1250 1254 1254 1255 1256	986		15439	USSR		733.4	63.4	38856	2264	
1244 USSR 19 DEC HELLIOCKNIRIC ORBIT 1244 USSR 20 DEC HELLIOCKNIRIC ORBIT 1244 USSR 20 DEC HELLIOCKNIRIC ORBIT 1244 USSR 21 DEC HELLIOCKNIRIC ORBIT 1244 USSR 21 DEC HELLIOCKNIRIC ORBIT 1244 USSR 12 DEC HELLIOCKNIRIC ORBIT 1244 USSR USS	400		15432	USSR		HEL IO	CENTRIC	ORBIT		
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0014 MS-T5 15464 JAPAN 7 JAN HELIOCENTRIC ORBIT 15465 JAPAN 7 JAN HELIOCENTRIC ORBIT 15465 JAPAN 7 JAN HELIOCENTRIC ORBIT 15465 JAPAN 114.0 B2.6 1412 JAN 115.0 B2.6 1412 JAN		HES								
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003B COSMOS 1618 15470 USSR 15 JAN 1114.0 82.6 1412 003C COSMOS 1619 15472 USSR 15 JAN 113.8 82.6 1412 003E COSMOS 1621 15472 USSR 15 JAN 113.8 82.6 1412 003E COSMOS 1622 15473 USSR 15 JAN 113.9 82.6 1412 003G COSMOS 1622 15474 USSR 15 JAN 113.9 82.6 1412 003A MOLNIYA 3-23 15481 USSR 15 JAN 113.9 82.6 14412 004A MOLNIYA 3-23 15481 USSR 17 JAN 100.6 74.0 92.4 006A COSMOS 1624 USSR 17 JAN 100.6 74.0 79.1 007A GORIZONT 11 15491 USSR 17 JAN 100.6 74.0 74.0 007B GORIZONT 11 15491 USSR 17 JAN	985	161	15469	USSR		114.0		_	1409	
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0.035 COSMOS 1621 15472 USSR 15 JAN 113.8 82.6 1412 0.036 COSMOS 1621 15474 USSR 15 JAN 113.9 82.6 14412 0.036 COSMOS 1622 15476 USSR 15 JAN 113.9 82.6 14412 0.046 MOLNIVA 3-23 15476 USSR 15 JAN 113.9 82.6 14412 0.040 MOLNIVA 3-23 15476 USSR 16 JAN 71.7 64.9 39043 0.040 MOLNIVA 3-23 15481 USSR 17 JAN 100.6 74.0 39746 0.050 COSMOS 1624 15491 USSR 17 JAN 100.6 74.0 791 0.060 COSMOS 1624 155491 USSR 17 JAN 100.6 74.0 791 0.060 COSMOS 1627 15492 USSR 17 JAN 101.0 74.0 791 0.07 COSMOS 1629 15494 USSR 14 JAN 136.1 35.0	80.0	161	15471	USSR		113.7	82.6	1412	1379	
OO 35 COMMUNICATION CONTROL OF C	C 4	162	15472	USSR		113.8	82.6	1412	1387	
0.050 0.050		791	15473	USSR		113.8	82.6	1412	1391	
0004A MOLNIYA 3-23 15491 USSR 16 JAN 717.7 64.9 39093 15400 00040		7	15475	USSR		114.7	82.6	1412	1396	
00040 COSMOS 1624 15481 USSR 16 JAN 731-7 65.0 39745 0066 0066 15482 USSR 17 JAN 100.6 74.0 799 0066 15483 USSR 17 JAN 100.6 74.0 791 0060 15491 USSR 17 JAN 100.6 74.0 791 0070 15491 USSR 18 JAN 1436.1 3.3 35606 0070 15494 USSR 18 JAN 1436.1 3.2 35696 0070 15494 USSR 18 JAN 146.1 47.2 2684 0075 15494 USSR 18 JAN 464.8 47.2 26824 0076 15494 USSR 24 JAN 97.5 82.5 663 010 15545 USSR 24 JAN 97.5 82.5 663 010 110 15545 USSR 104.0 82.9 1017 010 110		A 3-2	15476	USSR		717.7	64.9	39093	1257	
0.00 CUSMUS 1024 15482 USSR 17 JAN 100.7 74.0 799 65 0060 15483 USSR 17 JAN 100.6 74.0 799 65 0060 15490 USSR 17 JAN 100.6 74.0 799 65 0060 15491 USSR 17 JAN 100.6 74.0 799 65 0060 15494 USSR 17 JAN 100.6 74.0 799 65 0070 15494 USSR 18 JAN 1397.1 3.2 35096 65 0076 15494 USSR 18 JAN 464.8 47.2 26824 65 0076 15494 USSR 24 JAN 97.3 82.5 643 65 0106 15544 USSR 24 JAN 97.3 82.5 643 65 0107 15544 USSR 24 JAN 97.3 82.5 643 65 0108 106 USSR 10.5 10.5 10.5 10.5 65 0108 106 <td></td> <td>,</td> <td>15481</td> <td>USSR</td> <td></td> <td>731.7</td> <td>65.0</td> <td>39745</td> <td>1292</td> <td></td>		,	15481	USSR		731.7	65.0	39745	1292	
Second Color	ה מ	701	15482	USSR		100.7	74.0	801	780	
65 0.000 15491 USSR 17 101.00 74.0 620 65 0.070 15494 USSR 18 JAN 1436.1 3.3 35806 65 0.070 15494 USSR 18 JAN 1436.1 3.3 35806 65 0.070 15494 USSR 24 JAN 47.5 2.6824 65 0.094 USSR 18 JAN 97.5 82.5 642 65 0.098 USSR 24 JAN 97.5 82.5 652 85 0.098 USSR 24 JAN ELEMENTS NOT AVAILLABLE 85 0.108 USSR 1 FEB 104.0 82.9 1010 85 0.118 METEOR 2-12 USSR 1 FEB 104.0 82.9 100 85 0.118 METEOR 1 1 1 1 1 1 1	0 00		15483	USSR		100.6	74.0	799	769	
85 007A GORIZONT 11 15494 USSR 18 JAN 1436-1 3.3 35806 85 007D 15497 USSR 18 JAN 1397-8 3.2 35098 85 007F 15499 USSR 18 JAN 97-3 82-5 26824 85 009B 15549 USSR 24 JAN 97-3 82-5 663 85 010B 15543 US 24 JAN 97-3 82-5 663 85 010B 15543 US 24 JAN ELEMENTS NOT AVAILABLE 85 010B 15544 USSR 1 FEB 104-0 82-5 959 85 011B METEOR 2-12 USSR 1 FEB 104-0 82-5 959 85 014B METEOR 2-12 USSR 1 FEB 104-0 82-5 959 85 014B <td>85</td> <td></td> <td>15491</td> <td>8550</td> <td></td> <td>0.00</td> <td>0.47</td> <td>16/</td> <td>C P C</td> <td></td>	85		15491	8550		0.00	0.47	16/	C P C	
65 007D 15497 USSR 18 JAN 1397-8 3.2 35098 85 007F 15499 USSR 18 JAN 464.8 47.2 2 6824 85 007F 15494 USSR 18 JAN 464.8 47.2 2 26824 85 007F 15494 USSR 24 JAN 97.3 82.5 652 85 010B 15494 USSR 24 JAN 97.3 82.5 652 85 010C 15544 USSR 24 JAN ELEMENTS NOT AVAILABLE 15544 USS 115505 USSR 1 FEB 104.0 82.9 1007 85 011A 15566 USSR 1 FEB 104.0 82.9 1006 85 013B METEOR 2-12 15516 USSR 6 FEB 104.0 82.5 959 85 014B 15517 USSR 6 FEB 104.0 82.5 959 85 014B 15517 USSR 6 FEB 104.0 82.5 959 85 014B 15517 USSR 6 FEB 104.0 82.5 959 85 014B 15546 USSR 6 FEB 104.0 82.5 959 85 014B 15547 USSR 6 FEB 104.0 82.5 959 85 014B 15547 USSR 6 FEB 104.0 82.5 959 85 014B 15560 SA 8 FEB 104.0 82.5 959 85 014B 15561 USSR 6 FEB 104.0 82.5 959 85 014B 15562 ESA 8 FEB 1436.1 0.0 3580 85 016A 15561 USSR 21 FEB 1436.1 0.0 3580 85 016A 15561 USSR 21 FEB 1436.1 0.0 3580 85 016A 15561 USSR 21 FEB 1436.1 3.3 35789 86 016A 15581 USSR 21 FEB 1436.1 3.3 35139 <	85	-	15434	USSR		1436.1	o m	35806	C\$1	
65 0.07F 15489 USSR 18 JAN 464.8 47.2 26824 85 0.09A 15494 USSR 24 JAN 97.3 82.5 643 85 0.09B 15543 USSR 24 JAN ELEMENTS NOT AVAILLABLE 85 0.10G 15545 US 24 JAN ELEMENTS NOT AVAILLABLE 85 0.10G 15566 USSR 1 FEB 104.0 82.9 1017 85 0.13A METEOR 2-12 USSR 1 FEB 104.0 82.5 959 85 0.13A METEOR 2-12 USSR 6 FEB 104.0 82.5 959 85 0.13A METEOR 2-12 USSR 6 FEB 104.0 82.5 959 85 0.13B METEOR 2-12 USSR 1 FEB 104.0 82.5 959	85		15487	USSR		1397.8	3.5	35098	34968	
85 009A COSMOS 1626 15494 USSR 24 JAN 97.3 82.5 643 85 010B 15495 USSR 24 JAN 97.5 82.5 652 85 010B 15544 US 24 JAN ELEMENTS NOT AVAILABLE 652 85 010B 15545 US 24 JAN ELEMENTS NOT AVAILABLE 1017 85 011A CDSMOS 1627 15505 USSR 1 FEB 104.0 82.9 1017 85 011A CDSMOS 1627 15506 USSR 1 FEB 104.0 82.9 1017 85 011A CDSMOS 1629 USSR 6 FEB 104.0 82.9 1006 85 013A METEOR 2-12 15546 US 6 FEB 104.0 82.9 959 85 014B METEOR 15546 US 8 FEB ELEMENTS NOT AVAILABLE 950 85 015A ARABSAT 1 15561 BRAZIL 9 FEB 1436.1 0.0 35800 85 015A ACSMOS 1629 15561	82		15489	USSR		464.8	47.2	26824	173	
15495 USSR 24 JAN 97.5 82.5 652 15543 US 24 JAN ELEMENTS NOT AVAILABLE 15544 US 24 JAN ELEMENTS NOT AVAILABLE 15545 USSR 1 FEB 104.8 82.9 1017 15506 USSR 1 FEB 104.0 82.5 959 15506 USSR 1 FEB 104.0 82.5 959 15507 USSR 0 FEB 104.0 82.5 959 15508 USSR 0 FEB 104.0 82.5 959 15509 USSR 0 FEB 1436.1 0.1 35821 15509 USSR 2 I FEB 1435.1 3.5 35139 15509 USSR 2 I FEB 1448.7 3.5 36139 15509 USSR 2 I FEB 1435.1 3.5 36139 15509 USSR 2 I FEB 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	in 1	SMOS 162	15494	USSR		97.3	82.5	643	613	
15544 US 24 JAN ELEMENTS NOT AVAILABLE 15545 US 24 JAN ELEMENTS NOT AVAILABLE 15545 US 24 JAN ELEMENTS NOT AVAILABLE 15545 US 1654 US 24 JAN ELEMENTS NOT AVAILABLE 16545 US 1654 US US 1654 US US US US US US US U	0 4		15495	USSR		97.5	82.5	652	622	
State Stat	0 60		15543	S o		ELEME	F O Z	AVAILABLE		
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85 0118 METEOR 2-12 15506 USSR 6 FEB 104.0 82.9 1006 85 013A METEOR 2-12 15516 USSR 6 FEB 104.0 82.5 959 85 013B 10517 USSR 6 FEB 104.0 82.5 957 85 014B 15517 USSR 8 FEB ELEMENTS NOT AVAILABLE 957 85 015A ARABSAT 1 15560 SA 8 FEB 1436.1 0.1 35821 85 015A ARABSAT 1 15561 BRAZIL 8 FEB 1436.1 0.0 35821 85 015A COSMOS 1629 15562 ESA 8 FEB 1436.1 3.5 34395 85 016F COSMOS 1631 USSR 21 FEB 1448.7 3.5 36139 85 016F COSMOS 1631 15594 USSR 27 FEB 92.4 65.8 407 85 020A COSMOS 1633 15595 USSR 13 MAR 97.3 82.5 637	82	5 162	15505	USSR		0	82.9	1017	952	
45 013A METEOR 2-12 15516 USSR 6 FEB 104.0 82.5 959 45 013B 15517 USSR 6 FEB 104.0 82.5 957 45 014A 15546 USSR 6 FEB 104.0 82.5 957 45 014B 15547 USSR 8 FEB FEB 1436.1 0.1 35821 85 015A ARABSAT 1 15560 SA 8 FEB 1436.2 0.0 35821 85 015C COSMOS 1629 15561 BRAZIL 8 FEB 1436.2 0.0 35821 85 016C COSMOS 1629 15574 USSR 21 FEB 1448.7 3.5 36139 85 016F COSMOS 1631 15584 USSR 27 FEB 92.4 65.8 407 85 020A COSMOS 1631 15592 USSR 5 MAR 97.3 82.5 637 85 021A GEOSAT 15595 US 13 MAR 100.5 100.0 785	89		15506	USSR		104.7	82.9	1006	953	
85 0138 15517 USSR 6 FEB 104.0 82.5 957 85 014A 15546 US 8 FEB ELEMENTS NOT AVAILABLE 957 85 014B ARABSAT 1 15547 US 8 FEB ELEMENTS NOT AVAILABLE 85 015A ARABSAT 1 15560 SA 8 FEB 1436.1 0.1 35821 85 015A ARABSAT 1 15561 BRAZIL 8 FEB 1436.2 0.0 35800 85 015A COSMOS 1629 15562 ESA 8 FEB 1435.1 3.5 35780 85 016A COSMOS 1631 15574 USSR 21 FEB 1448.7 3.5 36139 85 016A COSMOS 1631 15584 USSR 27 FEB 92.4 65.8 407 85 020A COSMOS 1633 15592 USSR 5 MAR 97.3 82.5 637 85 021A GEOSAT 15595 USSR 13 MAR 100.5 108.0 785	9	EOR 2-1	15516	USSR		104.0	82.5	959	932	
15546 US B FEB F	ر د د		15517	USSR		0	85.5	957	933	
15547 US FEB FEMENTS NOT AVAILABLE 15560 SA FEB 1436.1 0.1 35821 15561 BRAZIL B FEB 1436.2 0.0 35800 15562 ESA FEB 1436.2 0.0 35800 15563 ESA FEB 1436.2 0.0 35800 15564 USSR 21 FEB 1448.7 3.5 35789 15581 USSR 21 FEB 1448.7 3.5 36139 15584 USSR 27 FEB 92.4 65.8 407 15592 USSR 5 MAR 97.3 82.5 637 15595 US 13 MAR 100.5 108.0 785 15595 US USSR 100.0 785 15595 USSR 100.0 100.0 15595 USSR 1	0 0		15546	sn:		ELEMEN	NOT	AVAILABLE		
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85 016A COSMOS 1629 15574 USSR 21 FEB 1448.7 3.5 35789 85 016F 15581 USSR 21 FEB 1448.7 3.5 36139 85 018A COSMOS 1631 15584 USSR 27 FEB 92.4 65.8 407 85 020A COSMOS 1633 15592 USSR 5 MAR 97.3 82.5 637 85 021A GEOSAT 15595 US 13 MAR 100.5 100.0 785	60	1	15562	FSA		2.06.41	9	35800	35776	
85 016F 85 018A CDSMOS 1631 15584 USSR 27 FEB 92.4 65.8 407 85 020A CDSMOS 1633 15592 USSR 5 MAR 97.3 82.5 637 85 021A GEOSAT 15595 US 13 MAR 100.5 108.0 785	85	162	15574	USSR		1435.1	0 tr	54545 04544	3535 3578.6	
85 018A CDSMOS 1631 15584 USSR 27 FEB 92.4 65.8 407 85 020A CDSMOS 1633 15592 USSR 5 MAR 97.3 82.5 637 85 021A GEOSAT 15595 US 13 MAR 100.5 108.0 785	82		15581	USSR		1448.7	3.5	36139	35926	
85 020A COSMOS 1633 15592 USSR 5 MAR 97.3 82.5 637 61 85 021A GEOSAT 15595 US 13 MAR 100.5 108.0 785 78	8	_	15584	USSR		92.4	65.8	407	376	
85 021A GEOSAT 15595 US 13 MAR 100.5 108.0 785 78	92	MOS 1	15592	USSR		7	82.5	637	619	
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INTER- NATIONAL NAME	CATALOG NUMBER SOI	SOURCE LAUNCH	PERIOD MINUTES	INCLI-	APOGEE	PERIGEE	TRANSMITTING FRED.(MHZ)
1985 LAUNCHES (CONT.)							
1985 0218	15596	US 13 MAR	100.4	108.0	803	752	
0		. 1.3	98.	108.5	720	742	
	70014	US 13 MAR	100.7	107.8	832	748	
1985 021F		13		107.5	890	724	
		R 14		82.9	1007	956	
0228	•		104	74-1	166	1672	
1985 CC01 VURSU) AESU 2861	15618 U	USSR 21 MAR	115.6	74 - 1	1492	1473	
023C COSMOS	-	21	115.	74.1	1486	1462	
0230 COSMOS		21	115.	74.1	1478	1454	
023E COSMOS		21	115.	74 - 1	1478	1438	
023F	15622	USSR 21 MAR	114.0	74.1	1478	1409	
1985 023H COSMOS 1642		21	114.	74.1	1476	1396	
023J		21	118.	74 - 1	1710	1473	
	15626	USSR 22 MAR	1019-1)	35.400	35456	
1985 025A INTELSAT VF10		22	1436.	0.0	35802	35772	
0258		22	463.	22.9	26705	210	
1985 OZBB ANIR CI	15643	CANADA 15 ADR	1436.2	1.0	35808	35770	
985 028D		13	607.	23.1	34417	352	
985 028E	16229		282.5	-		5	
1985 033A PROGNOZ 10	15661 U	USSR 26 APR	5783.7	76.8	194734	5975	
985 0330	•	26		65.0	200315	420	
035A GSTAR 1	1		1436.	. 0	35795	35778	
1985 0356 ELECOM 18	15679 E	ESA 8 MAY	546.3	7.3	31247	267	
985		3 0		6.8	16595	634	
985 037A COSMOS	_	17		64.8	19177	19081	
1985 0376 CDSMOS 1652	15699 0	USSR 17 MAY	675.8	64.0	19149	19115	
985 037F		17	675.	64.8	19168	19055	
985		17		52.1	19029	3	
1985 057H	15738 0	USSR 29 MAY	717.6	63.3	38721	1622	
0400		29		63.2	39195	1870	
0		30	105.	82.9	1015	972	
0418			101-5	71 - 1	0 FC	803	
1985 042D	בסיסט ע 15772 ע	USSR 30 MAY	101.	71.1	854	802	
		30		66.6	835	793	
		30	101.	66.6	832	807	
0		30	100.	000	1 A A	9 7 0 0 4 0	
	18765	TAR OF BASSI	103.0	00.0	966	8 (3)	
1985 OAXX		30	104.	66.6	1119	835	
0 (R 30	102.	66.6	932	827	
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INTER-										
DESI GNATION	NAME	NUMBER	SOURCE	LAUNCH	PER 100 MINUTES	INCLI- NATION	APOGEE Km.	PERIGEE KM.	TRANSMITTING FREG. (MHZ)	NOTES
1985 LAUNC	LAUNCHES (CONT.)									
985 04	COSMOS 1658	15808	USSR	NOT II	718.0	65.2	A C C A C	F 000		
985		15811	USSR		709.3	S (C)	37587	2347		
985	COSMOS 1660	15821	USSR	4	116.0	73.6	1523	1480		
1985 0478		82	USSR	4	116	73.6	1519	1479		
0 0	MUXELUS A	82	MEXICO	<u>-</u>	1436.1	0.0	35797	35777		354
9 2	AKABSAL IB TELSTAR 30	15825	S.A.	NOT 0	1436.1	• •	35818	35755		∯ En En
985		15832	S O	, 	1.064	0 0	36876	0.07.00		4 Sept
2		15836	ns	60	623.4	27.1	35198	000		
985		15837	SN	60	656.0	26.0	36861	4 d		
985	COSMOS 1661	15827		60	718.6	65.3	37578	2817		
985		15830	USSR		724.7	0.99	37939	2757		
9 62	INTELSAT VA F11	15873	ITSO		1436.1	0.0	35799	35773		
1985 0558		15874	Sn		572.2	23.0	32616	291		
9 9 9	GIOTTO	15975	ESA		HEL IOC	HELIOCENTRIC ORB	-			
		15976		2 JUL 5	498.2	8.1	28592	288		
0.00		17255	ESA		598.8	8.5	33993	314		
C 20 C		17325	ESA		588.3	7.3	33464	293		
985		17332	ESA	2 JUL	516.7	7.4	29372	529		
CB 5	COSMOS 1666	15889	USSR		97.3	82.5	649	613		
1980 0588		15890	USSR		97.5	82.5	657	621		
ה ה ה ה ה		19241	USSR	00	97.2	82.5	644	607		
1985 0510	MULNIVA 3-25	60661	USSR	-	717.6	63.9	39627	716		
0 0		15916	USSR		737.8	63.8	40617	722		
ים מים מים		15930	USSR	-	104.1	64.9	1009	892		
		15935	s s		107.9	60.0	1258	666		
9 60		ט ח	S E	2 A UG	107.9	60.00	1259	866		
985		15050	S S		V . C .	D 0	1259	666		
985		15951	S S		107.4)) ()	1225	776		
85 0		16020	SN		107.6	600	1223	795 7001		
985		17164	NS	-	108.2	89.4	1300	987		
995 0	COSMOS 1674	15944	USSR	8 AUG	97.3	82.5	644	614		
9 8 5		15945	USSR	8 AUG	97.5	82.5	654	622		
282	RADUGA 16	15946	USSR		1434.8	2.9	35767	35755		
1985 0 70F		15963	USSR	8 AUG	1472.4	3.1	36551	36434		
7 U	CUSMUS 1675	15952	USSR		717.8	67.4	38312	2043		
01/0 0861		15955	USSR		708.3		37813	2072		
) u	TLANT A	15967	NADAN		HEL IOCENTRIC		ыт			
ת ה ה ה		15969	NAGAL		HELIOCENTRIC	ENTRIC ORBIT	311			
0 0	MULNIYA 1-64	15977	USSR		717.7	2.49	39541	811		
O 1		15983	USSR		732.4	64.8	40251	819		
982		15986	USSR		103.9	64.7	1001	881		
5 8 2	AUSSAT 1	15993	AUSTRL	27 AUG	1436.2	0.0	35796	35778		354
985		15994	Sn	27 AUG	1436.1	0.0	35799	35774		35‡
985	SANCOM IV-4	15995	Sn	29 AUG	1437.6	0.0	35838	35795		354
985		15996	SN	_	636.5	25.9	35916	346		
000		16001	S	0	80	27.4	15302	356		
1985 0 766		16007	Sn	29 AUG	ů.	26.5	35749	373		
0		16389	USSR	29 AUG	104.8	71.0	1128	842		

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TIER- TIGNATION SIGNATION 85 LAUNCHES 85 077K 85 077K 85 077C 85 077C 85 077C 85 079C 85 079C 85 079C 85 079C 85 079C 85 084A COMBS CO										
NOTHES (CONT.) *** *** *** *** *** *** ***	NATIONAL DESIGNATION	NAME	-	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-		PERIGEE KM.	FRED.(MHZ)
985 077H 985	1985 LAUNCHE	S (CONT.)								
1985 077 1395 1)))		18608	USSR	•	•	74.1	798	775	
1289 0774 1289 16	985		16390	USSR	•	ĊĬ :	71.0	1157	841	
1635 0774 1680 1681 1687 29 AUG 100.9 71.0 1144 295			16391	USSR	φ	104.8	71.0	1128	839	
1001 USSR 4 SEP 100.7 74.1 801 100.8 100.7 74.1 801 100.8 100.7 74.1 801 100.8 100.7 74.1 801 100.8 100.8 100.7 74.1 801 100.8	900		16392	USSR	Ý	104.9	71.0	1144	839	
985 0798 0798 170012 USSR 4 SEP 100.5 74.1 729 985 0796 0798 10040 10050 10040 10050 10050 10050 10040 10050 10050 10040 10050 10050 10040 10050 10050 10040 10050	9 0	168	16011	USSR	•	100-7	74 - 1	801	778	
985 0826 0827	985		-	USSR			•	621	788	
985 0828 - 0822 - 0822 - 0822 16004 16005 1850 175	985		UR.	USSR		7 . 0	n 3	٠ *	ō	
986 0840 COSMOS 1084 16004 USSR 24 SEP 710.0 COSMOS 1086 16007 USSR 27 SEP 1436.1 0.0 35801 3986 0870 COSMOS 1089 161010 USSR 27 SEP 1436.1 0.0 35801 3986 0870 COSMOS 1089 161010 USSR 30 SEP 717.0 64.6 31900 698 0870 COSMOS 1089 16110 USSR 30 SEP 717.0 64.6 31900 698 0980 COSMOS 1089 16110 USSR 30 SEP 717.0 64.6 31900 698 0980 COSMOS 1089 16110 USSR 30 SEP 717.0 64.6 31900 698 0980 COSMOS 1089 16110 USSR 30 COT 717.7 64.6 31900 698 0980 0980 COSMOS 1089 16110 USSR 30 COT 717.7 64.6 31900 698 0980 0980 COSMOS 1089 16110 USSR 30 COT 717.7 64.6 31900 698 0980 0980 COSMOS 1089 16111 USSR 30 COT 717.7 64.6 31900 698 0980 0980 COSMOS 1089 16111 USSR 30 COT 718.1 80	985 0828	0822		USSR		יו נ	ָ ט	۳ د د	2512	
986 08A0 986 08A0 986 08A0 986 08A0 986 08A0 1010 1150 1150 29 SEP 986 08A0 1010 1150 1150 29 SEP 986 08A0 1010 1150 1150 29 SEP 986 08A0 1010 1150 1150 1150 1150 1150 1150 115	985 0	OSMOS 168	16064	USSR	G	` ;		21010	2530	
985 087A NTELSATI VA F-12 16105 USSR 27 EPP 1436-1 0.0 35801 31986 087A NTELSATI VA F-12 16102 USSR 30 SEP 703-6 64-6 37197 385 0884 088	985 0		16070	USSR	ı ın	, 0	- :	-	E 0 E	
985 087A INVELSAT VA F-12 16101 ITS0 29 SEP 1430-1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	985 0	05M0S 16	16095	USSR			•	# E C V	35775	
985 0878 0878 0878 0878 0878 0878 0878 08	985 0	VA F-1	16101	0511		1430.1	٠ د	31320	282	
985 088A COSMOS 1087 1610 USSR 30 SEP 703.6 64.6 36.9 36.8 985 088D COSMOS 1689 1611 USSR 3 OCT 96.8 97.8 64.6 3894 985 0998 985 0998 16112 USSR 3 OCT 96.8 97.8 64.6 3894 985 0998 985 0998 16112 USSR 3 OCT 717.7 64.6 3894 985 0991 16112 USSR 3 OCT 717.7 64.6 3894 985 0991 16112 USSR 3 OCT 717.7 64.6 3894 985 0992 16113 USSR 3 OCT 718.1 64.6 3894 985 0992 16113 USSR 3 OCT 718.1 64.6 3894 985 0992 16113 USSR 3 OCT 718.1 64.6 3894 985 0992 16113 USSR 3 OCT 718.1 64.6 2036 178.1 64.6 18.1 64.1 64.1 64.1 64.1 64.1 64.1 64.1 64	985 0		20101			717-0	•	37197	3116	
985 9908 COSMOS 1689 16110 USSR 3 OCT 96.8 97.8 615 985 9908 WOLNIYA 3-26 16111 USSR 3 OCT 773.0 67.8 3394 985 9910 WOLNIYA 3-26 16125 USSR 3 OCT 773.0 64.8 39000 1985 9910 WOLNIYA 3-26 16125 USSR 3 OCT 773.0 64.8 39000 1985 9920 166118 USS 3 OCT 773.0 64.8 39000 1985 9920 166117 USSR 3 OCT 773.0 64.8 39000 1985 9920 166118 USS 3 OCT 773.0 64.8 39000 1985 9920 166118 USS 3 OCT 778.1 63.9 2056 1413 1985 9936 1693 1692 166118 USSR 9 OCT 113.7 82.6 1413 1985 9946 COSMOS 1692 166138 USSR 9 OCT 113.8 82.6 1413 1985 9946 COSMOS 1693 1694 16141 USSR 9 OCT 113.8 82.6 1413 1985 9946 COSMOS 1693 1694 16144 USSR 9 OCT 113.8 82.6 1413 1985 9946 COSMOS 1693 1694 16144 USSR 9 OCT 113.8 82.6 1413 1985 9946 COSMOS 1693 1694 16144 USSR 9 OCT 113.8 82.6 1413 1985 9946 COSMOS 1693 1694 16144 USSR 9 OCT 114.0 82.6 1413 1985 9946 16144 USSR 9 OCT 114.0 82.6 1413 1985 9946 16144 USSR 9 OCT 114.0 82.6 1427 1628 USSR 9 OCT 114.0 82.6 14	985 0	05M05 168	10100	2000		703.6	•	36849	2804	
985 0904 CUSMOS 1009 985 091A WULNIVA 3-26 16112 USSR 3 OCT 734.0 985 091A WULNIVA 3-26 16112 USSR 3 OCT 747.7 985 091B 985 091B 985 092E 985 092E 985 092E 985 092E 985 092E 985 092E 16111 USSR 3 OCT 717.7 985 092E 16111 USSR 3 OCT 718.1 985 092E 16111 USS 3 OCT 718.1 985 092E 16112 USS 3 OCT 718.1 985 093E 16113 USSR 3 OCT 718.1 985 094A 16129 USSR 9 OCT 113.6 985 094A 16139 USSR 9 OCT 113.6 985 094A 16139 USSR 9 OCT 113.6 985 094A 16130 USSR 9 OCT 113.6 985 094A 16130 USSR 9 OCT 113.6 985 094A 16130 USSR 9 OCT 114.0 982.6 1413 1985 094A 16130 USSR 9 OCT 114.0 982.6 1413 1985 094A 16130 USSR 9 OCT 114.7 982.6 1413 1985 094A 16130 USSR 9 OCT 114.7 182.6 184.1 184.	985		16100			96.3	97.8	615	544	
985 0910 985 0910 985 0920 985 0934 985 094 985 09			16111	USSR		96.8	97.8	648	565	
985 9910 986 9920 987 9920 988 9940 COSMOS 1699 16139 988 9940 COSMOS 1692 16141 988 9940 16139 985 9940 COSMOS 1692 16141 988 9940 16142 985 9940 16143 985 9940 16144 985R 9940 16144 985R 9940 16145 985 9940 16146 985R 9940 16147 985 9940 16148 16149	6850	3-2	O.	USSR		717.7	64.6	38344	2007	
\$85 9926 928	985 0		O.	USSR			54.8		1917	
985 992C 16118	585 0		•	S		ELEME	Z	: ;		
985 0922 16118	85 0		Ο.	S			2 2	AVAILADEE		
985 092E	85 C		0	OS		יות אות מור מות	2 2	AVAII ABLE		
\$85 0938 \$938 0938 \$940 COSMOS 1690 \$950 0940 COSMOS 1690 \$950 0940 COSMOS 1692 \$950 0940 COSMOS 1692 \$950 0940 COSMOS 1692 \$950 0940 COSMOS 1693 \$950 0940 COSMOS 1693 \$950 0940 COSMOS 1693 \$950 0940 COSMOS 1695 \$950 0940 COSMOS 1697 \$950 094	985 0		16119	ב כל ל		-	63.9	20508	19864	
985 0946 COSMOS 1690 16136 USSR 9 OCT 113.7 82.6 1413 985 0946 COSMOS 1691 16149 USSR 9 OCT 113.8 82.6 1413 985 0946 COSMOS 1692 16141 USSR 9 OCT 113.8 82.6 1413 985 0946 COSMOS 1693 16141 USSR 9 OCT 113.8 82.6 1413 985 094F COSMOS 1693 16142 USSR 9 OCT 113.9 82.6 1413 985 094F COSMOS 1695 16142 USSR 9 OCT 114.7 82.6 1443 985 094F COSMOS 1695 16144 USSR 9 OCT 114.7 82.6 1447 985 094F COSMOS 1695 16266 USSR 9 OCT 114.7 82.6 1427 985 094F COSMOS 1695 16267 USSR 9 OCT 114.7 82.6 1427 985 094F COSMOS 1697 16267 USSR 9 OCT 114.0 82.6 1427 985 094F COSMOS 1697 16270 USSR 9 OCT 114.1 82.6 1427 985 094F 16270 USSR 9 OCT 114.1 82.6 1427 985 094F 16270 USSR 9 OCT 114.1 82.6 1427 985 094F 16270 USSR 9 OCT 114.1 82.6 1427 985 094F 16270 USSR 9 OCT 114.0 82.6 1427 985 094F 16270 USSR 9 OCT 114.0 82.6 1427 985 094F 16270 USSR 9 OCT 114.0 82.6 1413 985 094F 16270 USSR 9 OCT 114.0 82.6 1413 985 094F 16270 USSR 9 OCT 114.0 82.6 1413 985 094F 16270 USSR 9 OCT 114.0 82.6 1413 985 094F 16183 USSR 22 OCT 101.7 71.0 82.6 1413 985 094F 16183 USSR 22 OCT 101.7 71.0 84.6 1412 985 094F 16183 USSR 22 OCT 101.7 71.0 84.6 1412 985 094F 16183 USSR 22 OCT 707.9 63.9 370.5 1985 094F 16187 USSR 22 OCT 707.9 63.9 370.5 1985 094F 16187 USSR 22 OCT 707.9 63.9 370.5 1985 094F 16187 USSR 22 OCT 707.9 63.9 370.5 1985 094F 16187 USSR 22 OCT 707.9 63.9 370.5 1985 1096 094F 16187 USSR 23 OCT 101.2 82.6 1412 985 1026 094F 16187 USSR 24 OCT 101.2 82.6 1245 1246 1246 1246 1246 1246 1246 1246 1246	200		0 (US (368.2	63.8	20365	914	
985 0946 COSMOS 1691 16139 USSR 9 OCT 114.0 82.6 1413 985 0946 COSMOS 1692 16142 USSR 9 OCT 113.8 82.6 1413 985 0946 COSMOS 1693 16142 USSR 9 OCT 113.8 82.6 1413 985 0946 COSMOS 1694 16142 USSR 9 OCT 113.9 82.6 1413 985 0946 COSMOS 1695 16144 USSR 9 OCT 114.0 82.6 1413 985 0946 COSMOS 1695 16144 USSR 9 OCT 114.0 82.6 1413 985 0946 COSMOS 1695 16144 USSR 9 OCT 114.0 82.6 1424 985 0946 1626 USSR 9 OCT 114.0 82.6 1427 985 0940 1626 USSR 9 OCT 114.1 82.6 1427 985 0940 1626 USSR 9 OCT 114.1 82.6 1427 985 0940 16270 USSR 9 OCT 114.1 82.6 1427 985 0940 16271 USSR 9 OCT 113.3 82.6 1427 985 0940 16272 USSR 9 OCT 113.7 82.7 1601 985 0940 16272 USSR 9 OCT 113.5 82.6 1413 985 0940 16272 USSR 9 OCT 113.5 82.6 1413 985 0940 16272 USSR 9 OCT 113.5 82.6 1413 985 0940 16272 USSR 9 OCT 113.5 82.6 1413 985 0940 16272 USSR 9 OCT 113.5 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1413 985 0940 16272 USSR 9 OCT 114.0 82.6 1412 985 0940 16270 USSR 22 OCT 101.9 71.0 82.6 985 0940 16183 USSR 22 OCT 707.9 63.9 370.5 985 0940 16183 USSR 22 OCT 707.9 63.9 370.5 985 0940 16183 USSR 23 OCT 698.0 64.6 37391 985 0950 WOLNIYA 1-65 16184 USSR 23 OCT 109.3 82.5 1208 985 1020 WETCOR 3 16199 USSR 25 OCT 110.2 82.6 1245	יאיני מימול מימול	169	0.	USSR		113.7	82.6	1413	1379	
985 094C COSMOS 1692 16140 USSR 9 OCT 113.8 82.6 1413 985 094F COSMOS 1695 16141 USSR 9 OCT 113.9 82.6 1413 985 094F COSMOS 1695 16143 USSR 9 OCT 114.0 82.6 1413 985 094F COSMOS 1695 16144 USSR 9 OCT 114.7 82.6 1427 985 094K 16266 USSR 9 OCT 114.7 82.6 1427 985 094K 16266 USSR 9 OCT 114.0 82.6 1427 985 094K 16268 USSR 9 OCT 113.3 82.6 1427 985 094K 16269 USSR 9 OCT 113.3 82.6 1427 985 094K 16269 USSR 9 OCT 113.7 82.7 1514 985 094K 16272 USSR 9 OCT 113.7 82.7 1601 985 094P 16272 USSR 9 OCT 113.5 82.6 1427 985 094P 16272 USSR 9 OCT 113.5 82.6 1413 985 094P 16272 USSR 9 OCT 113.5 82.6 1413 985 094P 16272 USSR 9 OCT 113.5 82.6 1413 985 094P 16272 USSR 9 OCT 113.5 82.6 1413 985 094P 16183 USSR 22 OCT 101.9 71.0 82.6 1412 985 094P 16183 USSR 22 OCT 707.9 63.9 37025 985 094P 16183 USSR 22 OCT 707.9 63.9 37025 985 094P 16183 USSR 23 OCT 707.9 63.9 37025 985 094P 16183 USSR 23 OCT 707.9 63.9 37025 985 094P 16183 USSR 23 OCT 100.3 82.6 1245 985 094P 16183 USSR 23 OCT 100.3 82.6 1245 985 094P 16183 USSR 23 OCT 707.9 63.9 37025 985 094P 16183 USSR 23 OCT 707.9 63.9 37025 985 094P 16183 USSR 23 OCT 707.9 63.9 37025 985 094P 16184 USSR 23 OCT 707.9 63.9 37025 985 094P 16184 USSR 23 OCT 100.3 82.6 1245 985 094P 16184 USSR 23 OCT 100.3 82.6 1245	286		0	USSR	8	114.0	2	1413	1306	
985 094E COSMOS 1693 16141 USSR 9 OCT 113-8 82-6 1413 985 094E COSMOS 1694 16142 USSR 9 OCT 113-8 82-6 1413 985 094E COSMOS 1695 16144 USSR 9 OCT 114-0 82-6 1443 985 094E COSMOS 1695 16266 USSR 9 OCT 114-0 82-6 1467 985 094E 16267 USSR 9 OCT 114-0 82-6 1424 985 094E 16267 USSR 9 OCT 113-3 82-6 1427 985 094E 16267 USSR 9 OCT 113-3 82-6 1427 985 094E 16267 USSR 9 OCT 113-3 82-6 1427 985 094E 16270 USSR 9 OCT 114-1 82-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1413 98-6 1422 985 094E 16270 USSR 9 OCT 114-1 82-6 1413 98-6 1422 98-5 094E 16182 USSR 9 OCT 114-0 82-6 1412 98-5 094E 16182 USSR 9 OCT 114-0 82-6 1412 98-5 094E 16182 USSR 22 OCT 101-7 71-0 82-6 1412 98-5 094E 16183 USSR 22 OCT 101-9 71-0 84-5 98-5 98-5 98-5 98-5 98-5 16183 USSR 22 OCT 717-8 63-7 37453 98-5 1008 WETEDR 3 16187 USSR 23 OCT 698-0 64-6 37391 98-5 1024 USSR 24 OCT 109-3 82-5 1208 1208 1205 1024 USSR 24 OCT 109-3 82-5 1208 1205 1204 USSR 25 OCT 109-3 82-5 1208 1245 1224 1224 1224 1224 1224 1224 1224	985		16140	USSR		113.8	82.6	1413	106.1	
985 094E C0SM0S 1694 16142 USSR 9 OCT 114.0 82.6 14.13 985 094F C0SM7S 1695 1695 16144 USSR 9 OCT 114.7 82.6 14.67 985 094K 16266 USSR 9 OCT 114.0 82.6 14.67 985 094K 16267 USSR 9 OCT 114.0 82.6 14.27 985 094K 16267 USSR 9 OCT 113.3 82.6 14.27 985 094K 16269 USSR 9 OCT 115.0 82.6 14.27 985 094K 16269 USSR 9 OCT 115.0 82.6 14.27 985 094K 16270 USSR 9 OCT 114.1 82.6 14.27 985 094K 16270 USSR 9 OCT 114.0 82.6 14.27 985 094K 16270 USSR 9 OCT 114.0 82.6 14.27 985 094K 16270 USSR 9 OCT 114.0 82.6 14.13 985 094K 16270 USSR 9 OCT 114.0 82.6 14.13 985 094K 16181 USSR 9 OCT 114.0 82.6 14.13 985 094K 16181 USSR 22 OCT 114.0 82.6 14.13 985 094K 16181 USSR 22 OCT 114.0 82.6 14.13 985 094K 16181 USSR 22 OCT 114.0 82.6 14.13 985 094K 16181 USSR 22 OCT 717.8 63.7 37453 985 094K 16187 USSR 23 OCT 717.8 63.7 37453 985 094K 16187 USSR 23 OCT 717.8 63.7 37453 985 094K 16187 USSR 23 OCT 717.8 63.7 37453 985 094K 16187 USSR 23 OCT 718.0 64.6 37391 985 094K METEOR 3 16191 USSR 24 OCT 110.2 82.6 37391 985 100A METEOR 3 16190 USSR 25 OCT 1435.5 2.7 35794	985		614	USSR		113.8	0 0	1 4 1	7 0 0 0	
985 094F CDSMDS 1695	985		614	USSR		113.9	80.0	1 4 4 5	1403	
\$85 0946 16164 0587 9001 16267 USSR 9 001 183.3 82.6 1427 18285 0944 16268 USSR 9 001 115.0 82.6 1427 16269 USSR 9 001 114.1 82.6 1427 16270 USSR 9 001 114.1 82.6 1422 16270 USSR 9 001 113.7 82.7 1514 16271 USSR 9 001 113.7 82.6 1422 16271 USSR 9 001 113.7 82.6 1422 16271 USSR 9 001 113.7 82.6 1413 16271 USSR 9 001 113.5 82.6 1413 18777 USSR 9 001 113.5 82.6 1413 18777 USSR 9 001 114.0 82.6 1417 1882 0944 1883 0944 1884 0976 1885 0976 1887 0988 0978 1888 0978 1888 0978 1888 0988 0988 0088 1698 1888 0988 0988 0088 1698 1888 0988 0988 0088 1698 1889 0988 0998 MOLNIYA 1-65 1889 1889 0998 1889 0998 MOLNIYA 1-65 1898 1098 0988 0998 MOLNIYA 1-65 1898 1098 0988 0988 0988 23 001 1898 1098 0988 0988 24 001 1898 1098 0888 0888 24 001 1898 1098 0888 1208 1898 1098 0888 25 001 1898 1098 1098 1098 25 001 1898 1098 1098 1098 25 001 1898 1098 1098 1098 1098 1098 1098 1098	985			USSK		1 1 4 6 0		1467	1414	
985 094K 16267 USSR 9 OCT 113.3 82.6 1427 985 094M 985 094M 16269 USSR 9 OCT 115.0 82.7 1514 985 094A 985 094A 16270 USSR 9 OCT 113.7 82.6 1422 985 094A 985 094A 16271 USSR 9 OCT 113.7 82.6 1413 985 094A 985 097A 16183 USSR 22 OCT 101.9 71.0 82.6 1412 985 097B 985 097B 985 098A 16183 USSR 22 OCT 717.8 63.7 37453 985 098A 985	585 0		10164			114.0	82.6	1424	1398	
985 094M 16268 USSR 9 OCT 115.0 82.7 1514 16269 USSR 9 OCT 114.1 82.6 1422 16270 USSR 9 OCT 114.1 82.6 1422 16270 USSR 9 OCT 113.7 82.7 1601 16271 USSR 9 OCT 113.7 82.6 1413 16272 USSR 9 OCT 113.5 82.6 1413 16272 USSR 9 OCT 113.5 82.6 1417 17168 USSR 9 OCT 113.5 82.6 1412 17168 USSR 22 OCT 101.9 71.0 854 1618 USSR 22 OCT 101.9 71.0 854 1618 USSR 22 OCT 101.9 71.0 854 1618 USSR 22 OCT 707.9 63.9 37453 1618 USSR 22 OCT 707.9 63.9 37025 1698 USSR 23 OCT 718.1 64.7 38368 1618 USSR 23 OCT 718.1 64.7 38368 1619 USSR 24 OCT 109.3 82.5 1208 16194 USSR 25 OCT 110.2 82.6 1245 1008 USSR 25 OCT 1435.5 2.7 35794 16195 USSR	985		16267			ا بر ا	82.6	1427	1331	
985 094N 985 094P 985 094R 985 094R 985 094R 985 094R 985 094R 985 094R 985 094S 985	n oc n oc n oc		16258	USSR		15.	82.7	1514	1394	
985 0940 985 0940 985 0940 985 0948 985 0948 985 0940 985 0948 985 0940 985 0970 16181 985 0970 16182 985 0970 16183 985 0970 16183 985 0980 985 0980 985 0980 986 0980 16184 16185 16187 16188 16187 161			16269	USSR		114.1	82.6	1422	1404	
\$85 0940 985 0948 985 0948 985 0948 985 0949 985 0940 16272 USSR 9 OCT 113.5 82.6 1417 113.5 82.6 1422 18777 USSR 9 OCT 113.5 82.6 1422 18777 USSR 9 OCT 113.5 82.6 1422 985 0940 985 0940 985 0940 COSMOS 1697 16181 USSR 22 OCT 101.9 71.0 854 985 0976 985 0978 COSMOS 1698 16182 USSR 22 OCT 101.7 71.0 845 985 0980 COSMOS 1698 16183 USSR 22 OCT 717.8 63.7 37453 985 0990 MOLNIYA 1-65 16187 USSR 23 OCT 718.1 64.7 38368 1985 099E 1985 1000 METEOR 3 16191 USSR 24 OCT 109.3 82.5 1208 1885 1000 METEOR 3 16194 USSR 25 OCT 1435.5 2.7 35794	מ מ מ מ מ		16270	USSR		113.7	82.7	1601	1195	
985 0948 985 0948 985 0948 985 0948 985 0948 985 0940 985 0940 985 0970 985	C 85 0		16271	USSR		114.0	82.6	1413	1404	
985 0948 985 0940 985 0940 985 097A COSMOS 1697 16181 985 097B 985 097B 985 097B 16182 18777 16182 18777 1877 1878 1878 18777 1878 18777 1878 1878 18777 1878 1878 18777 1878 1878 1878 18777 1878 1878 18777 1878 1878 18777 1878 1878 1878 1878 1878 1878 18777 1878 1878 1878 1878 1878 18777 1878 1878 18777 1878 18	985 0		16272	USSR		113.5	82.6	1417	1 1000	
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985 099A MOLNIYA 1-65 16187 USSR 23 OCT 698-0 64-6 37391 985 099E	985		16186	USSR		718.1	64.7	38368	2004	
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985 116A COSMOS 1985 116A COSMOS 1985 1117A MOLNIYA 985 1117F COSMOS 1985 118C COSMOS 1985 118C COSMOS 1985 119A METEOR 2985 119A METEOR 2985 119A METEOR 2985 119B 985 121F 985 121F 985 002A COSMOS 1986 002C COSMOS 1986 002C COSMOS 1986 002D CO	16327 16368 16369			97.5 104.8 104.6 717.6	82.58 82.9	653 1008 1001 38141	625 959 953	
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985 1186 COSMOS 985 1186 COSMOS 985 1186 COSMOS 985 1186 985 119A METEOR 985 119B 985 121E 985 121E 986 121E 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS	1.6402			7 6 6 6	7 * 0 0		2206	
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985 1186 COSMOS 985 1186 985 119A METEOR 985 119B 985 121D 985 121E 986 121F 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	16397			675.7	0.00 0.00 0.00 0.00	19149	60161	
985 118F 985 118A 985 119A METEOR 985 119B 985 121E 985 121F 986 LAUNCHES 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS	16398			676.3	65.8	19155	10	
985 118A 985 119A METEOR 985 119B 985 121E 985 121F 986 LAUNCHES 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	0			675.5	65.8	19145	910	
985 1194 METEOR 985 1198 985 1216 985 1216 986 1216 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	4		۵	340.4	65.4	18797	74	
945 1198 METEUR 945 1210 945 1216 945 1216 946 1217 946 002A COSMOS 946 002C COSMOS 946 002C COSMOS 946 002C COSMOS	16446		Ω	340.3	65.2	18814	724	
965 1210 985 121E 985 121F 986 002A CDSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	16408		26 DEC		82.5	956	934	
985 121E 986 121F 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	16409		۵	4	82.5	955	935	
986 LAUNCHES 986 002A COSMOS 986 002B COSMOS 986 002C COSMOS 986 002C COSMOS	940		0	93.1	71.0	489	361	
986 LAUNCHES 986 002A CDSMOS 986 002B CDSMOS 986 002C CDSMOS 986 002C CDSMOS	10438		۵	-	40.0		599	
986 LAUNCHES 986 002A COSMOS 986 002C COSMOS 986 002C COSMOS 986 002C COSMOS	9		۵	O.	71.0	4	2	
986 002A CDSMDS 986 002B CDSMOS 986 002C CDSMOS 986 002D CDSMOS								
986 002B COSMOS 986 002C COSMOS 986 002D COSMOS	16449	ussn	NAL		0.46	9	•	
986 002C COSMOS 986 002D COSMOS	•	S	NAT.	1. A. B.			7011	
986 002D CDSM0S	16451	S		A. R. I.	0.4%	1101	14/3	
	16452	USSR	NAL 0	115.3	74.0	1494	14/	
986 002E CDSMDS	ø	S		115.1	74.0	1492		
986 002F CDSMOS 172	Φ	S		115.0	74.0	1681	1425	
986 002G CDSMOS	16455	S		114.8	74.0	1482	1410	
986 002H COSMOS 172	16456	USSR		114.6	74.0	1480	800	
86 0023	645	USSR		117.9	74.0	1695	1478	
1986 DOSB SAICOM KUI	40		12 JAN	1436.2	0.0	7	35782	
DEC COST COSMOS 133	0.40	Sn		623.0	27.2	525	314	
	3	SSR	_	104.8	N	0	296	
	10404	USSR		104.6	S		963	

OBJECTS IN ORBIT

T N TER-			() ()	(
NATIONAL DESIGNATION	ZAM	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	NATION	APOGEE	PERIGEE KM.	FREQ. (MHZ)
1986 LAUNCHES	ES (CONT.)								
))	COSMOS 1726	16495	USSR	17 JAN	97.3	82.5	643	614	
1986 006B		₽.	SS	7		2	653	622	
986	RADUGA 18	16497	USSR	7	1435.9	2.6	35798	35768	
		16501	USSR		041.1	47.0	30000	36344	
		16870	USSR		104.8	82 6	1014	956	
986	COSMOS 1727	16511	USSR	23 JAN	104.7	82.9	1003	957	
1986 0108	PRC 18	16526	PRO		1436.1	•	35788	35783	
		16528	PRC	1 FEB	629-4	30.4	35512	390	
0 (COSMOS 1729	16527	USSR	1 FE8	718.0	62.9	38429	1935	
0		16533	USSR	1 FE8	705.7	63.4		2025	
0		16591	S	9 FE8	ELEMENT	NOT	AVAILABLE		
986 0		16592	S	9 FEB	ELEMENTS	NOT	IL A BI		
0		16622	S	_	CURRENT		NOT	MAINTAINED	
0		16623	S	_	CURRENT		2 2	MAINTAINTO	
0		10024	- 0	אור קור קור	CURRENT	NT ELEMENTS	NO I	TAINED	
		16630	S	- -	ELEMENTS	NOT			
H410 9851		16631	SU	71	ELEMENTS	NOT	AVAILABLE		
0 (COSMOS 1732	16593	USSR	т	116.0	73.6		1477	
0		16594	USSR	70	115.9	73.6	1519	1476	
1986 016A	BS-2B	16597	JAPAN	. 71	1435.9	3 C	16.1CF	245	
0		16600	LATAN	10 FFR	92.2	51.6	293	375	
1986 0178 -			USSR		m		47#		
0184	COSMOS 1733	16611	USSR	70	97.3	82.5	644	614	
0		661	USSR		97.5	82.5	652	622	
٥	SPOT 1	16613	FRANCE	N	101.3	98.7	1 2 2 3	9 6 6	
0	VIKING	16614	SMEDEN			NOTE 90.0	984	4	
86 0	· 019VL	h	ESA	13 WAD	20 OF F	71 . O	(244	
1986 0244	COSMOS 1736	16647	USSR	21 MAR	104.4	5	1005	927	
1986 0248 -		1	USSR			NOTE	444		
0	GSTAR 2	16649	SO		1436.1	0.0	35795	35779	
0	SBTS 2	16650	BRAZIL		1436.2	. 0	35792	30782	
1986 0260		16657	ESA	0	053.8	1 0	16005	9 O P	
0		17253	1 F	e o	510-1	A . 7	0000	4 (4)	
			E 5 A		1.410) (1) 1	35841	35749	
0	COSMOS 1738	10007		* * * * * * * * * * * * * * * * * * *	1470.0) r	36695	36358	
	COSMOS 1741	16681	USSR	_	100.7	74.0	805	776	
1 986 0 308		16682	USSR	œ	100.6	74.0	797	773	
0		17842	USSR		101.0	74.0	824	791	
0		17843	USSR	18 APR	101.0	74.0	821	793	
86 0		18274	USSR	18 APR	100.6	74.1	816	753	
86		18526	USSR		100.6	74.0	789	763	
86 0		18681	USSR		101-1	74.0	929	26.5	
986 0		19235	USSR		104.0	74.0	2 P O O O	1 4 4 4	
986 0	MOLNIYA 3-28	16683	USSK	-	9-11-6) () (39684	1443	
1986 031D		16686	USSK	~ a > ₹ ₹	133.5	٠	54004		

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1			OBJECT	NI S	ORBIT					
INTER- National		CATALOG			PFRIOD	INCL I-	APOGFF	9501655	CNITTIMONACT	
DESIGNATION	NAME	. –	SOURCE	LAUNCH	MINUTES	NATION	KM.	. W. W.	FREG. (MHZ)	
1986 LAUNCHE	ES (CONT.)									
86 034	COSMOS 1743	16719	USSR	15 MAY	97.3	82.6	949	615		
6 034		16720	USSR	S	97.5	82.6	655	623		
86 037	COSMOS 1745	16727	S		104.8	83.0	1008	962		
86 037		16728	S		_	83.0	866	958		
86 038	EKRAN 15	16729	S		491	3.4	36918	36812		
80 038		16732	s c		20.	m (9 (35347		
) C	METEOR 2-14	16735	1000	24 MAY	40.40	4 · · · ·	13280	666		
86 039	' !	16736	USSB		40	20.00	900	900		
6 042	C05M0S 1748	. ^	S		15.	74.0	1468	1451		
96	SMO	16759	USSR	-	4	74.0	4	1391		
86 042	S	16760	S		114.6	74.0	1468	1406		
86 042	S	16761	USSR		115.6	74.0	1503	1465		
o 98	S	16762	USSR	NOT 9	115.4	74.0	1484	1466		
86 042	s	16763	USSR		115.3	74.0	1475	1459		
9	S 175	16764	USSR		114.9	74.0	1468	1435		
98	COSMOS 1755	16765	USSR		4	74.0	1468	1422		
86 042		16766	USSR		117	74.0	1691	1470		
96	GORIZONT 12	16769	S		436	2.2	35793	35775		
98		16797	USSR	-	4	2.2	36583	36482		
9 8	COSMOS 1758	16791	USSR	-	97.4	82.5	656	615		
9	(16792	USSR	٠,	ο .	82.5	ø	620		
1900 0478	COSMOS IVOS	10/98	3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20 0	104.7	82.9	1001	962		
יי פער	N V V	16799	2000	NO. 91	104.6	82.9	1025	925		
2 6	7	10302	8000		0.01/	C	00.404	\$ 7C		
9 9 9	COSMOS 1761	16849	9881	N KC	716.8	, v	47874	2741		
vo)	16854	USSR		710.0	63.0	37260	2709		
86 0	COSMOS 1763	16860	USSR		100.4	74.0	798	752		
86 0		16864	USSR	9	100.3	74.0	799	749		
96		16865	USSR	16 JUL	100.0	74.0	782	739		
9		16866	USSR		100.0	74.0	779	737		
96		16867	USSR		0	74.1	786	740		
0 '	COSMOS 1766	16831	USSR		97.4	82.5	649	620		
	•	16892	USSR		97.5	82.5		626		
9 4	MULNITA 1-0/	10895	x 5 5 5		717.9	64.7	39488	874		
9 6	000	60001	~	30 300	116.7	0.0	40185	9 C		
86 061	1 + 5 V T		NAGA	12 416	110.7	0.00	1000	2 0		
86 061		16910	NAGAL		116.0		rv	- K		
86 0	COSMOS 1771	16917	USSR		104.2	65.0	1003	206		
1986 062C		17035	USSR		03.	65.0	776	903		
86 065	COSMOS 1774	16922	USSR		716.9	64.8	æ	1514		
96		16925	USSR	28 AUG	707.0	65.3	38114	1706		
86 0	067AF		USSR	3 SEP		NOTE 4	\$ 9			
98	MOLNIYA 1-68	16934	USSR		717.7	9.49	38797	1555		
98		16939	USSR	S	731.3	64.7	39472	1545		
1986 070A	COSMOS 1777	16952	USSR	10 SEP	000	74.0	900	277		
86 070	C05405 1778	16953	2000	> (100.5	0.44	68.01	2//		
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NATIONAL DESIGNATION	Z A S M	CATALOG	SOURCE	LAUNCH	PERIOD	INCLI-	APOGEE	PERIGEE	TRANSMITTING FREQ.(NHZ)
1986 LAUNCHE	ES (CONT.)								
71B	COSMOS 1779	16962	USSR	16 SEP	O)	64 . 8	19143	19115	
86 0710	COSMOS 1780	O	USSR	6 SE		64.8	19151	19107	
8 6		16968	USSR	16 SEP	3 C C C C C C C C C C C C C C C C C C C	\$ \$ • • 0	19141	15051	
1986 071H		16985	USSR	s c	339.4	64.9	19151	328	
86 0	NOAA 10	v	SO	SE		98.6		803	
_		16982	Sn	s	100.1	98.7	769	755	
986 073		16983	SU		99.4	98.7	744	719	
986	COSMOS 1782	16986	USSR	SE		9 00 2 07 7 07	A 0.01	620	
986	00000	16987	USSK	מ כ	1 9 7 U	N	10672	170	
1986 075D	C003300	16996	USSR	3 OCT	357.0	63.3	19618	964	
986	COSMOS 1785	17031	USSR	00	717.4	66.6	38727	1610	
986 078		17037	USSR	Ċ	707.6	67.2	38210	1643	
986	MOLNIYA 3-30	17038	USSR		717.6	64.9	39430	913	
986		17041	USSR	20 OCT	0.669	04.0	38473	3577B	
1986 0820	2000	17052	USSR	25 OCT	637.1	45.9	36043	252	
986		17053	USSR	25 OCT	183.9	40.6	8513	155	
82F		17065	USSR		1475.5	h 00	36687	36419	
0864	COSMOS 1791	17066	USSR	13 NOV	104.7	82.9	1011	948	
0868		17067	USSR		104.6	83.0	1000	948	
	001 40 85 40	18552	USSR	1 W NOV	104.2	3 GE C	1016	957	
1986 0888		17071	S		104.8	89.5	1014	956	
986 0		18426	SO		105-1	89.1	1052	949	
1986 088D	NOI NIVA 1-60	18525	USSR	I & NOV	717.7	63.2 63.2 9	38245	2106	
986 0	•	17061	USSR		735.8	63.2	38915	2323	
986 0	GORIZONT 13	17083	USSR			1.7	35794	35777	
1986 090F		17149	USSR	18 NOV	632.9	47.3	35812	268	
86 0	COSMOS 1793	17134	USSR		717.8	64.8	38138	2219	
986 0		17147	USSR		705.9	65 . 3	37676	2089	
1986 0925	COSMOS 1795	17139	USSR	21 NOV	115.4	74.0	1480	1464	
860		17140	USSR		115.2	74.0	1476	1452	
1986 0920	COSMOS 1797	17141	USSR	21 NOV	115.0	74.0	1470	1442	
1986 0925	COSMOS 1700	17143	USSR		114.7	74.0	1470	1412	
986 0		17144	USSR		14.	74.0	1470	1396	
86 0	COSMOS 1801	17145	USSR		114.4	74.0	1469	1383	
96		17146	USSR	21 NOV	117.6	74.0	1673	1475	
1986 0935	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17160	USSR	24 NOV	104.8	82.9	1018	951	
986 0	COSMOS 1803	17177	USSR		115.9	82.6	1500	1494	
986		17178	USSR		115.9	82.6	1497	1493	
9 6		- N	USSR	2 DEC	1-750	2.4	35864	35708	
YOKO OBKI		16171	C O		Ĺ		000	0	

INTER-				OBJECT	ECTS IN ORBIT	917					
NATIONAL			CATALOG			PERIOD	INCL I-	APOGEE	PERIGEE	TRANSMITTING	
DESIGNATION	NAME	Z.E.	NUMBER	SOURCE	LAUNCH	HINUTES	NATION	X X	×	FREG. (MHZ)	
1986 LAU	LAUNCHES (CONT	•									
986	A COSMOS	1805	17191	USSR	10 DEC	97.3	82.5	K 4 7	014		
986 0			17192	USSR		,	82.5	652	1000		
0 986	COSMOS	1806	17213	USSR		716.8	62.8	38286	2021		
0 986			17216	USSR	~	705.8	63.1	37775	1987		
A001 0841	COSMOS	1808	17239	USSR	_	105.0	82.9	1016	696		
986			17240	USSB	۱ ۱	104.8	82.9	1009	964		
986	COSMOS	1809	17241	2002	1 7 DEC	104.5	82.9	992	040		
86 1			17242	9550	0 0	1 • • • •	82.5	962	626		
-			17268	USSR	18 DEC	103.8	0 0 0 0	901	0 0		
986	•		17269	USSR		104.3	82.6	972	0 1 0		
986 1			17270	USSR		104.1	82.4	955	950		
			17271	USSR		103.6	82.4	950	406		
٠.	•		17272	USSR		103.6	82.5	936	917		
-	· -		17273	USSR	00	103.5	82.5	933	913		
			17274	USSR	18 DEC	4	Š	687	938		
-			448/1	ທ (an i	m I	•	626	915		
•	AVIN IOM	1-70	19980	n	.	•	82.5	939	916		
1986 1930		2	1001	200	ZO DEC	_	٠	8 90	1450		
•			1 720 7	USSR	ø	698.8	63.0	38153	1260		
1987 LAUN	LAUNCHES										
1987 001A	METEOR	2-15	17290	USSR	NAU NAU	104.0	e.	9	o r		
	_		17291	ഗ	S	4		926	000		
1987 003A	COSMOS	1812	17295	USSR		97.4	82.5	0 40	617		
987			17296	USSR	14 JAN	97.5	82.5	92.0	, r c y		
286	- 004HC			USSR		SEE NOTE		68 \$	3		
987	COSMOS	1814	17303	USSR		100.6			765		
987	_		17304	USSR		100.5	74.1	799	761		
987			18257	USSR		100.5	74.0	790	776		
1987 008A	MOLNIYA	3-31	17328	USSR		717.9	63.1	38399	1959		
	004000	7.0	17333	USSR	22 JAN	730.7	63.1	60	2065		
087	000	0101	7356	USSR		4	82.9	1008	096		
186	COSMOS	1818	17369	1880		104.0	82.9	1005	646		
1987 011C			17399	USSB	- E	9 6	0.00	66.	287		
	_		17400	USSR		6.00		020			
987	ASTRO C		17480	JAPAN		95.2	31.1	0 K	474		
987			17481	NAGAL		96.1	31.1	648	964		
7 8 6			18927	JAPAN		95.6	30.8	608	064		
			17506	ns	12 FEB	ELEMENT	S NOT	AILA			
			17507	S n		ELEMENT	S	/AILABLE			
780	CONCO	1951	17525	USSR		0	82.9	1014	958		
0 6 6 6	,		17526	USSR	ω.	0	82.9	1008	244		
987 0	-		17871	244	9 F	0	99.1	606	806		
987 0	COSMOS	1823	17535	Z C C C C C C C C C C C C C C C C C C C	9 L	100.0	97.5	884	631		
87 0)]	17536	45.50 G2.51		0.011	•	1522	1477		
1987 0208	- 02000)	0550	נו נו נו	* L	0.5	-	1477		
				,		SEE NOT	ш	\$ }			

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NOTES

469

NUMBER SOURCE LAUNCH

PERIOD MINUTES

INCLI-

APOGEE

PERIGEE

TRANSMITTING FREQ. (MHZ)

NOTES

INTER-NATIONAL DESIGNATION

NAME

1987 0430		0 9 7	87 O		9.7	087 0	٥.	987 0	87 0	987 0	0	0	0	.	٥ (0								<u> </u>		0 1	0 (0 (1987 028E	5 6	1997 027	, ,			0	0	0	0	0		<u>.</u>	0	0	۰ م		7 022	87 022	1987 022A
COSMOS															COSMOS				GORIZONT		COSMOS				COSMOS		VANT	PALAPA 1			RADUGA					COSMOS				COSMOS 1		20	COSMOS 1		COSMOS			GDES 7
1940															1844				T 14		1842			1840	83	1838		8-2P			20					1833		1832	1831	1830	1829	1828	827		1825			
	18025	18024	18010	18009	18008	18007	17998	17997	18687	18476	18412	18411	18410	17974	17973	18112	18111	17972	17969	17912	17911	17913	17910	17904		17902	17845	17706	17709	17705	17611	18550	19527	18417	17590	17589	17588	17587	17586	17585	17584	17583	17582	17567	17566	17563	17562	17561
=								S		USSR		USSR					USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	INDNSA	USSR	USSR	USSR	USSR	0.000		USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	Sn	SU	S
						15 HAY	15 MAY	15 HAY	13 MAY	13 HAY	13 MAY	13 MAY	13 MAY		TA MAY	11 MAY	11 MAY	11 MAY		27 APR		24 APR	24 APR	4	4			20 MAR					30 (13 MAR	13 MAR	13 MAR	13 MAR	13 MAR	13 MAR	3 MAR	3 MAR	26 FEB	- T1	26 FEB
717.8	ELEME.	ELEMENTS	ELEMENTS	ELEMENTS	ELEMENTS	ELEME	ELEMENTS	ELEME	100.7	105.1	104.8	104.8	105.0	101.7	101.9	597.7	537.1	1397.8	1436.2	97.5	97.4	176.2	261.1	281.0	272.3	270.5	92.2	1436.2	635.6	1441.8	1436-1	104.6	104.9	105.0	101.7	101.9	114.6	113.9	113.8	113.9	114.0	113.7	113.8	97.5	97.3	675.0	110.7	1436.0
00.									-	71.0	71.0	71.0	71.0	71.0	70.9	47.0	46.9	3.5	3.5	82.5	82.5	64.7	64.9	64.9	64.8	64.9	51.6	0-1	47.4	1.8	1.9	71.0	71.0	71.0	71.0	10.0	82.6	82.6	82.6	82.6	82.6	82.6	82.6	82.5	82.5	17.8	21.7	0.0
38885	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE	AVAILABLE		AVAILABLE	!	1155	1132	1129	1147	846	8.54	34107	30892	35092	35798	658	653	7858	14143	(A)	14898	•		35802	35901	36007	35801	1116	1138	1149	1 125	B 000	1407	1409	1409	1410	1411		1409	652	044		2278	35818
1469									783	1 0 4 0	0 4 0	94.5	843	823	843	۰	128	34976	35776	623	619	210	165	184	176	175	376	35775	318	35789	35773	838	840	838	840	יות אני מ	F 46	1398	1388	1404	1409	1381	1393	624	617	270	243	35755

1875	MANE	INTER-		OBJECTS	z	0RB1T				
18006 USSR	S (CONT.)	NA W	CATALOG		LAUNCH	DERIGO MINUTES	INCLI-	APOGEE KM.	PERIGEE KM.	TRANSMITTING FRED.(MHZ)
1800 1800 1858 9 JUN 706.1 66.4 38356 1800 1809 1858 9 JUN 100.7 74.0 38058 1800 1800 1805 1800 1800 1858 9 JUN 100.7 74.0 39058 1800	1800 1800 1800 1858 4 JUN 706.1 65.4 3836 1801 1800 1808	S (CONT								
1895 18995 USSR 9 JUN 100.7 74.0 797 791 7	1850 18095 USSR 9 JUN 100.7 74.0 797 797 798 799 7		18086	USSR		706.1	4.99	38356	1423	
1850 18103 0.958 9 JUN 1160-5 74-10 797 74-10 18103 18103 0.958 12 JUN 7164-7 653-2 38958 18103 0.958 12 JUN 7164-7 653-2 38958 18103 0.958 12 JUN 7164-7 653-2 38958 18104 0.958 16 JUN 115-6 74-10 1475 18104 185-6 18113 0.958 16 JUN 115-6 74-10 1475 18104 185-6 18113 0.958 16 JUN 114-6 74-10 1475 18104 185-6 18113 0.958 16 JUN 114-6 74-10 1475 18104 18123 0.958 16 JUN 114-6 74-10 1475 18104 18123 0.958 16 JUN 101-6 65-10 96-3 18104 185-6 18113 0.958 16 JUN 101-6 65-10 96-3 18104 185-6 18113 0.958 16 JUN 101-6 65-10 96-3 18104 185-6 18104 0.958 16 JUN 101-6 65-10 96-3 18104 0.958 19 JUL 104-7 65-10 96-3 19 JUL 104-7 95-3 19 JUL 104-7 95-2 19 JUL 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 104-7 95-2 1	1805 1805 1958 9 JUN 100.5 74.0 38958 1913 1805 1958 9 JUN 710.7 6 33.0 38958 1913 1810 1958 12 JUN 710.7 6 33.0 38958 1913 1810 1958 12 JUN 710.7 6 33.0 38958 1913 1915 1958 1911 1912 1958 1911 1912 1958 1911 1912 1958 1911 1912 1958 1911 1912 1958 1911 1913 1958 1911 1913 1958 1911 1913 1	SM05 18	0	USSR		100.7	74.0	801	977	
1852 18115 USSR 12 JUN 17774 63.2 38359 1854 1858 1854 1854 1858 1854 1854 1854 1854 1854 1854 1858 1854 18	1852 18115 1858 12 JUN 115.4 74.0 1497 11854 18115 1858 15 JUN 115.4 74.0 1497 11854 18115 1858 16 JUN 115.4 74.0 1475 11855 18115 1858 16 JUN 115.4 74.0 1475 11855 18115 1858 16 JUN 115.4 74.0 1475 11855 18115 1858 16 JUN 114.4 74.0 1475 11855 18115 1858 16 JUN 114.4 74.0 1475 11855 18115 1858 16 JUN 114.4 74.0 1475 11855 18120 1858 16 JUN 114.4 74.0 1475 11855 18120 1858 16 JUN 114.4 74.0 1475 11855 18121 1858 16 JUN 114.4 74.0 1475 11855 18121 1858 18 JUN 104.0 65.0 963 1824 1828 18 JUN 101.4 99.8 815 18121 1858 19 JUN 101.4 99.8 815 1824 1858 18 JUN 104.7 82.9 992 18121 1858 18 JUN 104.7 82.9 992 1825 18121 1858 19 JUN 104.7 82.9 992 1825 18 JUN 104.7 82.9 992 1825 18 JUN 104.7 82.9 992 1825 18 JUN 105.1 82.9 992 18 JUN 105.1 82.9 992 18 JUN 105.1 992 18 JUN 105.1 992 18 JUN 105.1 992 19 JUN 105.1 992 19 JUN 105.1 992 19 JUN 105.1 992 19 JUN 105.1 992 105.1	SMOS 18		0.558 0.558		718.7	0.60	38958		
1852 18113 USSR 16 JUN 115.4 74.0 1497 1853 18114 USSR 16 JUN 115.4 74.0 1497 1815 18115 USSR 16 JUN 115.4 74.0 1475 18115 USSR 16 JUN 114.4 74.0 1475 18115 USSR 18 JUN 101.4 74.0 1475 18115 USSR 20 JUN 101.4 99.8 852 USSR 18 JUN 101.4 99.8 852 USSR	1862 18113 USSR 16 JUN 115.6 74.0 1497 1185 18114 USSR 16 JUN 115.4 74.0 1497 1185 18116 USSR 16 JUN 115.4 74.0 1475 1185 18117 USSR 16 JUN 114.8 74.0 1475 1185 18117 USSR 16 JUN 114.8 74.0 1475 1185 18112 USSR 16 JUN 114.8 74.0 1475 1185 18121 USSR 16 JUN 114.8 74.0 1475 1185 18121 USSR 16 JUN 114.4 74.0 1475 1185 USSR U	· ·		USSR		707-4	63.2	38359		
1854 18114 USSR 16 JUN 115.4 74.0 1470 1185 18116 USSR 16 JUN 115.4 74.0 1475 1185 18116 USSR 16 JUN 114.6 74.0 1475 1185 18110 USSR 16 JUN 114.6 74.0 1475 1185 18121 USSR 16 JUN 114.6 74.0 1475 1185 18121 USSR 16 JUN 114.6 74.0 1475 1185 18121 USSR 18 JUN 114.6 74.0 1475 1185 18121 USSR 18 JUN 114.6 74.0 1475 1185 18121 USSR 18 JUN 101.1 09.8 815 18121 USSR 18 JUN 101.1 09.8 815 815 18121 USSR 18 JUN 101.1 09.8 815 815 18121 USSR 18 JUN 101.1 09.8 815 815 18121 USSR 23 JUN 101.1 09.8 815 815 18121 USSR 23 JUN 104.7 82.9 1020 18121 USSR 24 JUN 105.1 82.9 100.0 182.0	1855 18114 USSR	SM05 18	2	USSR		115.6	74.0	1497	1471	
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1879 18338 USSR 7 SEP 113.8 82.6 1408 1880 18340 USSR 7 SEP 113.8 82.5 1408 K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 35794 K3 18351 ESA 16 SEP 416.0 7.2 23920 1883 1835 USSR 16 SEP 675.7 65.5 19153 1 1884 1835 USSR 16 SEP 675.7 65.5 19153 1 1885 USSR 16 SEP 675.7 65.5 19153 1	1879 1838 USSR 7 SEP 113.8 82.6 1408 1880 1839 USSR 7 SEP 113.8 82.6 1408 K3 18340 USSR 7 SEP 114.6 82.6 1469 K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 3 1883 1835 ESA 16 SEP 416.0 7.2 23920 1884 1835 USSR 16 SEP 675.7 65.5 19153 1 1885 USSR 16 SEP 675.7 65.5 19153 1 1886 USSR 16 SEP 675.7 65.5 19153 1 1886 1835 USSR 16 SEP 675.7 65.5 19155 1	-	18			113.9	82.6	1408	1398	
1880 1839 USSR 7 SEP 113.8 82.5 1408 K3 18340 USSR 7 SEP 114.6 82.6 1469 K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 35794 18351 ESA 16 SEP 416.0 7.2 23920 1883 1835 USSR 16 SEP 675.7 65.5 19153 1 1884 1835 USSR 16 SEP 675.7 65.5 19153 1 1885 USSR 16 SEP 675.7 65.5 19153 1	1880 18339 USSR 7 SEP 113.8 82.5 1408 K3 18340 USSR 7 SEP 114.6 82.6 1469 K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 3 18351 ESA 16 SEP 1436.1 0.1 35843 3 1883 USSR 16 SEP 675.7 65.5 19153 1 1884 1835 USSR 16 SEP 675.7 65.5 19153 1 1885 USSR 16 SEP 675.7 65.5 19153 1 1886 USSR 16 SEP 675.7 65.5 19155 1	18	18			113.8	82.6	4	1393	
SSAT K3 18340 USSR 7 SEP 114.6 82.6 1469 5.4 18351 ESA 16 SEP 1436.1 0.0 35794 35 5.4 18352 ESA 16 SEP 416.0 7.2 23920 5.40S 1883 1835 USSR 16 SEP 675.7 65.5 19153 1 5.80S 1884 1835 USSR 16 SEP 675.7 65.5 19153 1 5.80S 1885 USSR 16 SEP 675.7 65.5 19153 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19153 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19153 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19155 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19155 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19155 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19155 1 6.80S 1885 USSR 16 SEP 675.7 65.5 19155 1	SSAT K3 1885 AUSTRL 16 SEP 114.6 82.6 1469 35794 35 4 18351 ESA 16 SEP 1436.1 0.0 35794 35 4 18352 ESA 16 SEP 1436.1 0.1 35843 35 4 18352 USSR 16 SEP 675.7 65.5 19153 15 8005 1885 18350 USSR 16 SEP 675.7 65.5 19153 15 8005 1885 18350 USSR 16 SEP 675.7 65.5 19155 11 8360 USSR 16 SEP 674.7 65.4 19136 11	18	18			113.8	82.5	1408	1388	
SSAT K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 3 3 4 18351 ESA 16 SEP 1436.1 0.1 35843 3 3 1835 ESA 16 SEP 416.0 7.2 23920 2405 1883 1835 USSR 16 SEP 675.7 65.5 19153 1 1835 USSR 16 SEP 675.7 65.5 19155 1 1835 USSR 17 USSR 1	SSAT K3 18350 AUSTRL 16 SEP 1436.1 0.0 35794 3 5 4 18351 ESA 16 SEP 1436.1 0.1 35843 3 18352 ESA 16 SEP 416.0 7.2 23920 5405 18355 USSR 16 SEP 675.7 66.5 19153 1 58005 1886 18350 USSR 16 SEP 675.7 65.5 19155 1 18360 USSR 16 SEP 674.7 65.6 19155 1		18340			114.6	5	1469	1408	
5 4 18351 ESA 16 SEP 1436.1 0.1 35843 3 3 4 18352 ESA 16 SEP 416.0 7.2 23920 5405 1883 18355 USSR 16 SEP 675.7 65.5 19153 1 18356 USSR 16 SEP 675.7 65.5 19153 1 18357 USSR 16 SEP 675.7 65.5 19153 1 18357 USSR 16 SEP 675.7 65.5 19155 1 18357 USSR 17 US	5 4 18351 ESA 16 SEP 1436.1 0.1 35843 3 3 1 18352 ESA 16 SEP 416.0 7.2 23920 5405 1883 18355 USSR 16 SEP 675.7 65.5 19153 1 5 805 1884 18350 USSR 16 SEP 675.7 65.5 19153 1 5 805 1885 USSR 16 SEP 675.7 65.5 19155 1 18360 USSR 16 SEP 674.7 65.4 19136 1	SSAT K	18350	AUSTRL		1436.1	0.0	35794	35781	
18352 ESA 16 SEP 416.0 7.2 23920 S 1883 18355 USSR 16 SEP 675.7 65.5 19153 19 S 1884 18356 USSR 16 SEP 675.7 65.5 19153 19 S 1885 18357 USSR 16 SEP 675.7 65.5 19155 19	18352 ESA 16 SEP 416.0 7.2 23920 S 1883 18355 USSR 16 SEP 675.7 65.5 19153 19 S 1884 18356 USSR 16 SEP 675.7 65.5 19153 19 S 1885 18357 USSR 16 SEP 675.7 65.5 19155 19	ın	18351	ESA		1436.1	0.1	35843	35730	
S 1884 18355 USSR 16 SEP 675.7 65.5 19153 1 S 1884 18356 USSR 16 SEP 675.7 65.5 19153 1 S 1885 1837 USSR 16 SEP 675.7 65.5 19155 1	S 1883 18355 USSR 16 SEP 675.7 65.5 19153 1 S 1884 18356 USSR 16 SEP 675.7 65.5 19153 1 S 1885 18357 USSR 16 SEP 675.7 65.5 19155 1 18360 USSR 16 SEP 674.7 65.4 19136 1		18	ESA		416.0	7.2	23920	242	
\$ 1884 18356 USSR 16 SEP 675.7 65.5 19153 1910 \$ 1885 18357 USSR 16 SEP 675.7 65.5 19155 1910	S 1884 18356 USSR 16 SEP 675.7 65.5 19153 1910 S 1885 18357 USSR 16 SEP 675.7 65.5 19155 1910 18360 USSR 16 SEP 674.7 65.4 19136 1907	S	3 18	>	S	675.7	5.	915	19105	
0SMUS 1885 1835 USSR 16 SEP 675.7 65.5 19155 1910	05MUS 1885 18357 USSR 16 SEP 675.7 65.5 19155 1910 18360 USSR 16 SEP 674.7 65.4 19136 190 7		4 18	>	S	675.7	ç.	912	0	
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INTER-			9 n	JECTS IN DR	0R81T				
NATIONAL DESIGNATION	NAME	CATALOG NUMBER	SOURCE	LAUNCH	PER 100 MINUTES	INCLI-	APOGEE KM.	PERIGEE	TRANSMITTING
988 LAUNCHES	HES (CONT.)								
0	COSMOS 1914	18793	USSR		113.7	82.6	4	9 .	
00 0		18794	USSR	15 JAN		. 2	1468	1561	
88 CC3A	METEOR 2-17	18820	USSR		4		957	933	
α		18821	USSR		•	2	954	\$ M O	
		80 6	s :		0	0	823	912	
00		18845	S 0	3 FEB	00	98.7	277	763	
		פיי	o 0	2 11 12 12 12 12 12 12 12 12 12 12 12 12	00	en i	763	757	
		9 8	50		•	നെ	777	767	
	CS-3A	87	JAPAN) r			·	
		18879	JAPAN	0	532) h		50765	
988 013A	COSMOS 1922	₽	USSR	ø	717.7	62.7	857	1775	
7610 000	,		USSR		705	m		1816	
	0	∞ ।	PRC	^	1436.2	0.0	-⊌C	35784	
		80	USSR	-	115.7	74.0	1513	145	
	SOURCE SOURCE	EC 6	USSR	-	15.		1495	1457	
		ю с	USSR	_			1477	1458	
		ю (USSR		ທ	74.0	1465	1453	
	COSMOS 1928	0	USSR	 .	114.9	•	1459	1442	
		18942	0.558	٠,	114.7		4	1427	
) ec	2000	NAM	114.6		1458	1412	
		894	ussa	٠.	7.1.		1458	1396	
		19451	USSR		117.6	0-42	1080	1462	
	MOLNIYA 1-71	18946	USSR	11 MAR	717.7	63.2	38763	15,00	
0/10 886		18949	USSR	-	695.6	65.9	38769	. (C)	
	SPACENET SR	18951			1436.0	0.0	35789	35783	
		18952	FRANCE	11 MAR	1436.1	0.0	35790	35784	
	COSMOS 1043	18953	ESA	11 MAR	570.3	7.1	32537	268	
988 0190	7	10951	3000	I & MAR	104.4	65.0	966	933	
	COSMOS 1933	18058	2002	HAM H	104.0	ů,	296	931	
) 	0000	200	Y 4 7	d 1	82.5	648	621	
0	IRS-1A	18960	AIGNI	TAME CT		82.5	653	624	
		18961	ussa	17 MAD	י ר	0.00	913	894	
8 022A	MOLNIYA 1-72	18980	USSR	17 MAR	717.6) · · · · · · · · · · · · · · · · · · ·	, (857	
0		18983	USSR	17 MAR	731.6	* 4	00000	689	
0	C0SM0S 1934	18985	USSR	~	104.6	0 0 0	2 -	2 4	
0		18986	USSR	22 MAR	104.5	0.60	0	1 6	
0	GORIZONT 15	19017	USSR	_	36.	0	4	147	
9 (19020	USSR	_	72.	•	l (C	46405	
968 UZBE		19036	USSR	31 MAR	40.	•	v)	
		19037	USSR	_	621.6		51	346	
9 0	CUSMUS 1937	19038	USSR	5 APR	100.5	74.0	€	764	
9 6		19039	SS		100.4	74.1	800	758	
0	CUSHUS 1939	0 '	S	0	97.1		636	599	
o		0 (S I	20 APR	۲.	^	674	597	
· •		0 (s i	6 AP	8	90.3	0	1012	
2 6		19071	s i	۷ 9	8	0	1302	_	
7		19072	sn	6 AP	108.5	•	0	1013	

CATALOG NUMBER SOURCE LAUNCH

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NOTES

INTER-NATIONAL DESIGNATION

NAME

1988 058B	88	88 0	988 0	1988 053D	1988 053C	1988 0538	۵	88 0	1988 051H	88	1988 051F	88	886	988		988		988 0	988	88	988 0	88	88 0	88 0	988	886	988	0 0 0			1988 0404	900	9 00	988 0	88 0	٥		0	0	٥	۵.		۰.	8 6	600		1988 033D
PH080S 2	PHOBON 1		OKEAN 1				COSMOS 1954								USCAR 13	METEOSAT		COSMOS 1953		195	COSMOS 1949		MOLNIYA 3-32					194	COSMOS 1946		INTELSAT SA F-13					COSMOS 1943			EKRAN 18				COSMOS 1940				
19287	10261	19275	19274	19261	19260	19257	19256	19223	19951	19857	19220	19219	19218	19217	19216	19215	19211	19210	19196	19195	19193	19190	19189	19170	19169	19168	19165	19164	19163	19122	19121	10128	19127	19126	19120	19119	19094	19093	19090	19083	19082	19076	19073	19181	19140	0	19077
USSR	000	בר מינו מינו		CVVX	USSR	USSR	USSR	Sn	ESA	ESA	ES.A	ESA	ESA	S	Sn	ESA	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	S	ITSO	USSR	USSR		COUR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	S	S	SO	S
וב שער	7 11	7 400				21 JUN			15 JUN		15 JUN			15 JUN	15 JUN	15 JUN		14 JUN		30 MAY					21 MAY									1				-	O MAY					Φ.		Ò	26 APR
TRANS	HE TO	TRANS	97.6	7.5	100.7	100.5	100.6	108.9	632.1	634-1	544.5	619.3	508.3	1436.2	686.7	1436.0	97.5	97.5	116.0	116.0	91.0	733.0	717.7	339.9	339.9	674.5	675.7	675.7	675.7	635.8	1436.0	105.1	105-1	104.7	101.0	101.9	1424.1	608.3	1436.1		639.3	1438.4	1430.4	109.2		107.6	108.3
TRANS-MARS TR	HEI TOCENTATE ORB	TRANS-MARS TRAJE	82.5	20 T	74-1	74.1	14.0	90.0	. a. c	7.2	. 0	10.5	10.5	0.0	57.0	0.2	82.5	82.5	73.6	73.6	65.0	64 . 3	64.2	65.3	65.4	64.9	64.9	64.9	64.9	7.1	0.0	71.0	71.0	71.0	71-0	7: .0	1	46.3	1 . 5	47.3	48.6	0.5	0	90.2	90.3	90.6	90.3
TRAJECTORY	=	CTO	650	652	A 7 9 0	700	100	1190	10200	40405	21/07	35111	29214	35797	37241	(😘	657	653	1514	1519	300	C		18904	18908		19140	19142	19147	35730	35798	1155	1159	1122	1113	10 O	1000	34696	35798	36714	36022	35953	35779	1384	1282	1238	1821
			624	621	785	786	768	778	1 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0	8 000	h	7 0	122	35780	1567	35774	623	620	1482	2941		9 9	713	607	600	19068	19117	19116	19110	497	35772	842	841	841	839	9 O	8 P P P P P P P P P P P P P P P P P P P	60 4 ME	35775	523	387	35711	35571	993	1009	997	1000

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INTER-			3080	OBJECTS IN ORBIT	віт				
NATIONAL		CATALOG			PERIOD	INCLI	APOGFF	DEBLCEE	SULTITIONAUT
DESI GNATION	ON NAME	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	X X	KH.	FREG. (MHZ)
1988 LAUNCHE	ICHES (CONT.)								
688 059		19288	USSR	12 JUL	EL 1	OCENTRIC 0	ORBIT		
1988 062A	COSMOS 1959	19324	USSR	c	1.40		1004	952	
0 00	0 14021	19325	USSR	18 Jul	104.6	83.0	766	951	
. 0	ECS 5	19334	ESA		1436.1		35906	35766	
0 886		0	ESA	21 JUL	554	7.2	31704	254	
о •		20127	INDIA		35	7.3	35771	431	
E 0 0		20488	ESA	_	432.6	7.2	24883	252	
1 9 8 8 0 0 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	METEOR 3-2	19336	USSR	, o	60	N	1206	1181	
988 0	COSMOS 1960	19337	USSR	26 JUL	109.3	82.5	1204	1181	
988	- 065AF) }	USSR		Š	Э	70¢	7	
	COSMOS 1961	19344	USSR	-		1	35	35765	
0 886		19347	USSR		459	0.2	36388	36102	
9 9 8		19348	USSR	1 AUG	468.0	46.9	26897	280	
986	MOLNIYA 1-73	19377	USSR	2	717.7	64.1	39958	393	
986	!	19380	USSR	N	-	64.2	0	305	
60 6	GORIZONT 16	19397	USSR	œ	1436-1	0.1	35804	35769	
0170 8891		4	USSR	60	1432.1	0.2	35796	35619	
10 d 10 d 10 d		10401	USSR	æ.	600.1	46.7	42	131	
1966 0715		19402	ussu ::	o i	377.0	46.9	21607	210	
9 6		61461	s :	25 AUG	107.4	89.9	-	1031	
9 60		19450	S 2	n K	107.	D (0		1032	
986		19515	S) LC	F - 201	V 0 0	1170	1034	
		19516	ns Ns		, 0	0.08	1166	מ מ	
88		19559	o so	ı ın		• 0	171	2 6	
0 885		19577	SO	ß	107.3	. 0	1168		
988	CDSMOS 1966	19445	USSR	0	,	0	39094	25	
80 6		19448	USSR		705.5	64.4	38502	~	
988 0		19458	ns		EL EMENT	NOT	VAILABLE		
7660 8861		19459	Sn:		ELEMENTS	NOT	VAILABLE		
988		0646	s u	Z SEP	ELEMENT	S NOT	AVAILABLE		
0		19461	SD O	ט ה הייני			AVAILABLE AVATIABIE		
	FENGYUN 1	19457	PRC		102.7	99.2	1	4.6	
0		19468	PRC		02.	99.2	897	876	
98	GSTA	19493	O.S	8 SEP	1436.0	2.2	35790	35782	
988	585 5	19484	SO	8 SEP	1436.1	0.0	35792	35781	
0 885		19485	ESA		555.1	7.3	31729	260	
o ·	COSMOS	10561	USSR		675.7	65.2	19154	19104	
80	COSMOS 197	19502	USSR	ø	675.7	65.2	19161	19096	
000	COSMUS 1972	19503	USSR	ø	675.7	65.2	4		
		20	USSR		674.9	65.2	19148	19061	
o 0		19535	USSR		39.	65.1	19014	462	
9000 0061		19537	USSR		39.	64.9	902	454	
9 6	66-65	19508	24047	16 SEP	9 6	ė,	35788	35786	
983 089	THE WOOL	יט כ	201	n u	, c	•	35800	D 4	
988 089		19532	5 5	24 557	• •	0	803	er (0 er (1	
		,)	n •	•	•	†	, .	

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NOTES

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1988 LAUNC 1983 089C 1988 090D 1988 0918	1988 LAUNCHES (CONT.) 1983 089C 1988 090A MOLNIYA 3-33 1988 090B TDRS 3
0.0	COSMOS 1974
0 0	COSMOS 1975
	RADUGA 22
	2
1988 095F	
9 0	COSMOS 1977
	1DF-1
3860 8861 8860 8861	
885	
1988 102A	COSMOS 1980
1988 1028 1088 1026	, w
1988 102F	
1989 1023	
1988 1068	A HKDAN 10
	!
1988 108E	
OD (A SKYNET 48
1988 1098	ASTRA 1A
8	0
1988 111A	A MOLNIYA 3-34
8 6	
	A COSMOS 1985
1988 1158	A MOLNIYA 1-74

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1989 LAUNCHES

35774 35369 1468 1468 35774 35548 35785 435 35785 435 1083 481 502 432

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A M E	NUMBER	SOURCE	LAUNCH	MINUTES	NATION	X X	X X	FREG. (MHZ)
COSMOS 1987		55		675.7	•	7 4	10111	
	19750		0	~	4	-		
5951	19791	2		75	;	\$	910	
	19753	SS		75.		15	19096	
	19754	SS	0	674.7	4	6	19064	
	19755	2	0	339.7	65.1	894	557	
	19856	SS	10 JAN	•	65.2	893	557	
GORIZONT 17	19765	25		36.	7. 0	579	35778	
	19768	25		635.8	46.3	Ø	225	
	19771	S		~	46.6	23704	ø	
	19776	SS		0	†• 0	654	36329	
2 1992	0	55	26 JAN	0	74.0	802	768	
	977	55		00	74.1	€	773	
	983	SS		00	74.1	805	774	
	466	S.S		00	•	N	779	
SAT 5A F-15	19772	13		1436.2	0.0	S	35781	
	977	ESA	27 JAN	38	7.7	_		
	19785	SS		113.9	82.6	1414	1392	
	19786	USSR		4	82.6	1414	1410	
	19787	USSR		7	82.6	1414	1404	
-	19788	USSR	10 FEB	•	å	1414	1398	
· دی	19789	USSR		•		1414	1388	
CUSMUS 1999	19790	USSR		13	٠	1414	1381	
	16791	USSR		4	95.28	-	1413	
1002 6	19796	2000	14 758	717.6	•	39085	1259	
	00000	200		റ	ຕຸ	200	-	
MOLNIYA 1-75	19807	0001	L	717	55.1	900	2002	
	10810	0550		٠.	•	9 6	0 4	
0-	19822	\ A	21 FEB	· M	75.1	0 0	010	
	19824	JAPAN		0	75.1	5.6	27.2	
	19952	JAPAN		75	75.5	m	135	
	19962	NAGAL	_	91	75.7	0	265	
	19963	UAPAN	-	9	75.2	3	265	
	20034	JAPAN	1	O,	72.3	8808	547	
COSMOS 2004	19826	USSR	N	5.	82.9	1013	971	
METEOR 2-18	19851	USSR	80	0	2	S	937	
	19852	USSR	a 0	104.0	82.5	959	936	
-1	19874	SAPAN		3	0.5	35815	ĸ,	
	19876	ESA		3	•	58	35764	
	or.	ESA		418.7	6.5	413	161	
	O.	ESA	ø	419.2	9.9	4	208	
0	Q.	SN	m	1436.0	0.0	S	35774	
	Ō.	ns	m	•	26.6	m	274	
	O	SO	m	31.	3.0	S	35640	
	O	S	4	114.5	74.0	1469	1391	
		USSR	24 MAR	4	4	1470	04	
	Q.	S	4	4	74.0	1470	1422	
COSMOS 2011	O.	S	4		4	1470	E	
	19906	USSR	4	115.1	4	1 4 70	4	

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APOGEE

PERIGEE

TRANSMITTING FREO. (MHZ)

NOTES

INTER-NATIONAL DESIGNATION

NAME

1989 LAUNCHES (CONT.)

34893	35152	0.9	1397.3	Ĵ	U1	USSR	20110		1989 0520
35775	35802	0.9	1436.2	ر	5	USSR	20107	GORIZONT 18	
955	1001	83.0	104.7	בר	4	USSR	20104		
957		83.0	104.8	JUL	•	USSR	20103	NADEZHDA	
145	33597	46.4	588.0	S	21	USSR	20094		1989 048F
100	12459	46.1	236.2	Z C	21	USSR	20093		
36361	36575	ပ် 8	1471.1	Č	21	USSR	20086		
35769	35801	0.8	1436.0	C C	21	USSR	20083	RADUGA 1-1	
	AVAILABLE	NOT	ELEMENTS	CZ	14	SU	20319		
	AVAILABLE	NOT	ELEMENTS	Ž Ž	14	SO	20069		
	AVAILABLE	NOT	ELEMENTS	C Z	14	SU	20068		
	AVAILABLE	NOT	ELEMENTS	Š	14	S	20067		
	AVAILABLE	X 0 T	ELEMENTS	Č	14	S	20066		1989 046A
427	465	65.8	93.5	Š	14	USSR	20065		
453	486	65.8	94.0	S C S	14	USSR	20064	COSMOS 2027	
163	13220	37.4	247.9	Č	10	S	20063		1989 0440
19964	20400	54.7	718.0	C	10	SU	20061		1989 044A
442	40730	63.4	734.4	CN	8	USSR	20055		
451	39897	63.4	717.7	Š	9	USSR	20052	MOLNIYA 3-35	
947		82.9	104.5	SON	7	USSR	20046		1989 0428
949	1007	82.9	104.7	Š	7	USSR	20045	COSMOS 2026	1989 042A
184	25669	6.8	444.9	S C N	ú	ESA	20043		1989 0410
205	32705	6.6	572.3	C Z	ران ران	ESA	20042		1989 0410
35774	35800	0.0	1436.1	Š	را ت	FRG	20041		1989 0418
35776	35798	0.0	1436.2	NON	O1	JAPAN	20040	SUPERBIRD A	1989 041A
438	19064	65.1	339.8	YAY	31	USSR	20082		
437	19066	64.8	339.8	MAY	31	USSR	20081		
19095	19146	65.0	675.4	X Y	31	USSR	20044		
19053	-	65.0	674.5	X A X	31	USSR	20028		
1 9097	_	65.0	675.4	YAH	31	USSR	20026		
19093	_	65.0	675.7	XX	31	USSR	20025		
19118	1913		675.7	YAK	31	USSR	20024	COSMOS 2022	
MAINTAINED	NOT	ELEMENTS	CURRENT	MAY	10	S	19983		
MAINTAINED	NOT	ELEMENTS	CURRENT	HAY	10	SU	19977		
	NOT AVAILABLE	S NOT	ELEMENTS	MAY	10	S	19976		
MAINTAINED	NOT		CURRENT	HAY	₽	S	19971		
266	25484	~	443.1	YAM	4	SO	19970		
	TRAJECTORY	VENUS TI	TRANS-V	MAY	•	S	19969	MAGELLAN	
154	34087	46.8	597.5	APR	14	USSR	19933		
36396	36520	0.6	1470.6	APR	14	USSR	19931		
35775	35806	0.6	1436.3	APR	14	USSR	19928	RADUGA 23	
949	1001	83.0	104.6	APR	•	USSR	19922		
951	1012	83.0	104.7	APR	*	USSR	19921	COSMOS 2016	1989 028A
220	28290	4.0	491.6	APR	N	ESA	19920		
35769	35804	0.0	1436.1	APR	~	SWEDEN	19919	TELE-X	1989 027A
480	488	47.7	94.3	MAR	24	Sn	19911		1989 026A
1471	1683	74.0	117.7	MAR	24	USSR	19910		1989 025J
1468	1507	74.0	115.7	MAR	24	USSR	19909		
1468	1488	74.0	115.5	N A R	24	USSR	19908	COSMOS 2014	
1463	1478	74.0	115.3	N N N	24	USSR	19907	COSMOS 2013	1989 025F

DBJECTS IN DRBIT

INTER-					-				
NATIONAL DESIGNATION	N A K	CATALOG	SOURCE	7	PERIOD	INCLI	APOGEE	PERIGEE	TRANSMITTING
1989 LAUNCHES	HES (CONT.)						I	· X	FREG. (MHZ)
1989 052E		20115	assn	- u		٧	6	;	
<u>ි</u> 68		20116	ď	. r	2 0 0 0	0.04	24282	126	
9 053	OLYMPUS	20122	ESA		1636.2	0 0	35033	ı,	
0		20123	ESA	12 JUL	593.8	• •	70000	35/68	
9 053		20229	ESA		• 4	9	36136	# W	
0		20147	USSR		92.8	65.0	4.16	0 0 7	
0	COSMOS 2034	20149	USSR	25 JUL	104.9	82.9	1010	4 4 9 0	
0		20150	USSR	25 JUL	104.7	oo.	1002	80.0	
BIOD KRAI		20167	ns	8 AUG	ELEMENTS	NO.	AVAILABLE		
		20172	ns		ELEMENTS	NOT	AVAILABLE		
9 00		20344	SO		CURRENT	EL EME	S NOT MAINTAINED	UT A I NED	
1080 0601	TACOAL C	20168	FRG		1436.2	0.1	35813	35762	
	TLLERKOS	20159	ESA		639.6	7.0	35933	492	
1000 0001		20170	ES∀		634.8	7.6	35834	344	
0 0		20171	전 :	7 0	559.9	7.3	32042	204	
080		58102	SO		718.0	54.9	20251	20113	
		20187	so:		15	37.7	5852	140	
0 686		50102	¥ :		1436.2	ċ	35792	35783	
0 000	FEGG SOMBOO	20195	50		644.7	23.3	36412	272	
686		20102	2550 2500		vo :	73.6	1522	1482	
690 686		76102	X (2)		116.0	73.6	1520	1483	
0 686		20202	S 5	4 4 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ELEMENTS	LON :	AILABLE		
		20203	0 0	1 4 1 0 1 0	CHEMENTS	S NOT	AILABLE		
0	オトの兄の	20217	NAGAL		CORRENT	ш	S NOT MAI	NTAINED	
		20230	NAGAL		1.0041		35 791	35784	
686		20317	JAPAN		ר מ	7.07	37037	277	
Q,		20220	ns		, .	L	U	35235	
63	COSMOS 2038	20232	USSR		113.8		O MOST MAINING O	TAINED	
685		20233	USSR	. 4) M	9 6 6	104.	1390	
685		20234	USSR		114.0	9.20	1407	1384	
686	SM05 204	20235	USSR		113.8	2 0	1741	007	
695	S.	20236	USSR			82.6	1407	1093	
6 8 6	SMGS 204	20237	USSR	14 SEP		82.6	1400	140 8041	
		20238	USSR		114.7	82.6	1472	1407	
A110 0001		20253	ns	S	1436.1	•	35809	35764	
	,	20254	ns	S	557.3	28.2	31906	205	
1080 0780	MULNITA 1-76	20255	USSR	_	717.8	62.8	39590	762	
	770C 30M300	20258	USSR	7	•	62.8	38652	741	
7 7	0 10 0	20259	USSR	^		65.0	416	402	
080		20201	USSR	œ .	115.7	82.6	2480	498	
		19202	7 S S S S S S S S S S S S S S S S S S S	.	115.7	82.6	2479	497	
0 00	01 1447 1000	> (2550	00	115.8	85.6	2483	498	
1989 0810	-	2 (USSR	60	1436.1	1.0	35793	35778	
0		99707	1880 1991	00	3	1.1	35816	35565	
80		20270	2002	6 0 (•	46.8	30844	115	
68	GAL IL MO	> <	200		616.8	46.8	35087	159	
0 68)))	> <	2 2		ELEMENTS	TS NOT AV	AVA ILABLE		
0 68) C	۰ ر ۱	18 001	CURRENT	T ELEMENT	ELEMENTS NOT MAINTAINED	TAINED	
)))			r. n ar	ELEMENTS NOT AV	AVAILABLE		

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TRANSMITTING FREQ.(MHZ)

1									
INTER- NATIONAL DESIGNATION	NAMM	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD MINUTES	INCLI-	APOGEE	PERIGEE	FRE
686	LAUNCHES (CONT.)								
)))		>	E S	_	718.0	54.7	20283	20079	
1080 0858		20303	S	21 OCT	99.4	35.7	965	494	
1989 0850		20304	S	-	322.6	37.6	18224	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
989 0	METEOR 3-3	20305	USSR	24 OCT	109-4	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1209	1194	
989 0		20306	USSR	24 OCT	1436-1	0.1	35833	35740	
680	IN ECONT ON	20316	ESA		628.5	6.9	35581	270	
1980 C88A	COSMOS 2049	20320	USSR		89.5	64.8	268	227	
989		20322	S		102.7	0.66	810	697	
0		20323	S		102-6	99.0	892	869	
89 0		20324	5 5	NOV NOV	102.7	99.0	892	884	
		20355	SO	23 NOV	ELEMENT	S NOT	AVAILABLE		
9060 6861		20356	SO		ELEMENTS	S NOT	AVAILABLE		
1689 0900		20357	SO		ELEMENTS	NOT	AVAILABLE	649	
	COSMOS 2050	20330	USSR	23 NOV	705.2	63.1	39067	664	
	COSMOS 2051	20334	USSR	24 NOV	92.7	64.9	416	101	
1589 093A	, 10	20335	USSR		92.2	51.6	393	3/4	
	×	20338	USSR	28 NOV	717.8	62.9	40347	717	
	TO ANA T	20352	USSR		5903.5	56.5	202103	1542	
1989 0968		20353	USSR	1 DEC	104.4	51.5	1711	1264	
		20354	USSR	1 DEC	104.7	5 C	1738	223	
		20361	SO	11 DEC	717.9	55.0	20340	20021	
1989 0975		20362	S	11 DEC	99.3	35.6	957	764	
989		20353	SO		272.0	1 . 3	35805	35763	
68.0	RADUGA 24	20370	USSR	15 DEC	1471.6	1.3	36569	36388	
1989 0985		20371	USSR		646.9	46.9	36365	100	
69		20 372	USSR		047.0	73.5	527	509	
8 6	CO2MO2 5023	20390	USSR	27 DEC	95-1	73.5	529	512	
H001 6851		20515	USSR		93.9	73.5	471	* # 3	
		20522	USSR	27 DEC	94.2	73.5	491	473	
1989 100K		20532	USSR		94.4	73.5	504	478	
6	COSMOS 2054	20391	USSR	27 DEC	1436.0		36415	36313	
685		20394	ביים מיים מיים	27 DEC	044.3	46.9	36394	272	
1989 101F		20400	USSR	27 DEC	641.3	46.9	36290	220	
1990 LAUNC	HES								
1550 001A	SKYNET 4A	20401		1 JAN	1436.2	э ш э ш	35794	35783	
990 00	JCSAT	20402	JAPAN		7.00.6	21.4	34763	305	
90		90406 40408	5 0	C	340.5	26.7	19232	316	
8200 0661 4100 0661	LEASAT 5	20410	SO	9 JAN	1435.9	3 . 3	36303	35263	

NATIONAL DESIGNATION NAME	CATALOG NUMBER	SOURCE LAI	UN CH	PERIOD MINUTES	INCLI-	APOGEE	PERIGEE KM.	TRANSMITTING FREG. (MHZ)
LAUNCHES (CONT.)		<u> </u>					i i	FREG. (MHZ)
	20411	Sn	NAU 0	276.2	27.3	15025	916	
004A COSMOS 2056	20432	USSR		0	74.0	80	772	
0400	20433	USSR	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100.6	74.0	811	759	
0000	20435	USSR		100.6	74.0	# K	260	
SP01-2	20436	FRANCE	22 JAN	101.3	98.7	822	921	
OSCAR 1	20437	ž			98.7	802	784	
OUSC OSCAR 15	20438	S !		100.8	7.86	802	786	
	20439	so:		0	98.7	805	784	
DSCAR 1	20440	s o	22 JAN	100.7	98.7	805	784	
1 04050	1441	s :		0	98.7	805	783	
1 X X 7 C C	2000	SO		0	98.7	802	783	
> 10M	50443	ESA		100.6	98.6	196	179	
	*****	3880		717.6	62.8	39753	290	
	204402	USSR		697.6	52.5	38772	584	
10 0 E	86402	NAC	.	ELEMENTS	TS NOT	AVAILABLE		
AMODOSAM 0200	10402	NATA	4	ELEMENTS NOT		AVAIL		
	AXX C	2447	ς,	SELENO	SELENOCENTRIC	088		
X 00 00 00 00 00 00 00 00 00 00 00 00 00	26402	s :		718.0	54.6	20275	20088	
	20453	S :	24 JAN	102.5	35.6	1306	451	
0104 (08408 2059	20420	50		336.0	37.6	19108	153	
במא במשבחי	20405	3550		ELEMENT	S NOT	AVAILABLE		
011A PRC-26	00403 EC400	X (0	Z (1 7) i	9.76	82.5	299	627	
	20474	7 0		1430.0	7 0 6	35790	35780	
012A COSMUS 2059	20476	USSB		0.101	9 4	2000	502	
	20477	8550		4.01	00.00	2021	1 09 P	
013A MOS 18	20478	NAGAL		0 - 60 -	0 0	7191	9/1	
DEBUT	20479	APAN		112.2	9.66	\$0 \$ £	800	
013C JAS 1-B	20480	VADAN		112.2		747	\$05 6	
0130	20491	JAPAN		110.1	000	7407	A 00 0	
014A SOYUZ TM-9	20494	USSR		0.0			1 40	
015A	20496	Sn		95.4		0.40	4 6 6	
0158	20497	ns		0	1 - 1 - 4	476	* U.Y	
0150	20498	SO	4	93.6	4 1 4	7 4 7 4	0 H 4	
016A RADUGA 25	20499	USSR		1.04		u		
0160	20502	USSB		1430.8	•	10000	x 0 / 0 / 0	
016E	20506	8550	ی د	E 353	• •		10/05	
016F	20802	0001) u		0 0	74600	305	
017A NADEZHOA-2	20508	11550		***	V • F	11600	162	
	20500	0000	٠,		0.00	101	Ç.	
O18A OKEAN-2	2052	000		· · · · · ·	0.00	1011	6 46	
	2001	2 0 0	0 (1 - 1 - 1	82.5	663	634	
0198	20516	¥660	0 0	1.16	ω,	663	633	
2610	01002	n (1 0	ELEMENT	S NOT	AVAILABLE		
	71502	SO	60	ELEMENT	S NOT	AVAILABLE		
0610	0	ns	60	ELEMENT	S NOT	AVAIL ABLE		
019E	20519	S O	60	ELEMENTS	NO.	AVAILABLE		
1610	0 (s :	æ	ELEMENTS	S NOT	AVAILABLE		
	20521	sn:	28 FEB	ELEMENT	S	AVAILABLE		
TYPE PROCESSION MIN	20513	บรรห	28 FEB	9.06	51.6	331	276	

80-

INTER-NATIONAL DESIGNATION

NAME

NUMBER SOURCE

LAUNCH

PERIOD MINUTES

INCLI-

APOGEE

PERIGEE

X 3

1990 LAUNCHES (CONT.)

INTELSAT-6 COSMOS 2060 COSMOS 2061

COSMOS 2062

20523 20527 20527 20528 20529 20533 20533 20534 20535 20536 20536 20536

14 MAR 20 MAR 20 MAR 20 MAR 22 MAR 26 MAR 27 MAR 27 MAR 27 MAR 27 MAR

95.9 92.8 1105.0 104.8 89.6 716.0 89.7 351.6 717.6 91.9 91.9

574 416 1014 1005 283 20207 355 20087 39737 506 506

549 402 970 968 20059 169 161 608 617

1990 021A 1990 023A 1990 023B 1990 025A 1990 025A 1990 025B 1990 025C 1990 026A 1990 026A

COSMOS 2063

FREQ. (MHZ)	TRANSMITTING
NOTES	

INITIAL ELEMENTS OF OB	ENTS OF OBJECTS	JECTS WHICH WERE LAUNCHEDZGAIALOGED_AND_DEGAMED WITHIN THE	CHEDCCAIAL!	GED_AND_D	ECAYED WITH	IN THE REP	REPORTING PERIOD	100
INTER- NATIONAL DESIGNATION	NAMG	CATALOG NUMBER	SOURCE	LAUNCH	PERIOD Minutes	INCLIN- NATION	APOGEE Km.	PERIGEE Km.
1987 02000		20454	USSR	20 FEB	96.3	73.2	664	40
1990 0010		20403	ns	1 JAN	94.4	28.6	815	193
1590 001E		20405	SO	1 JAN	0.06	28.6	400	148
1590 002A	STS 32	20409	Sn	NAU O	91.2	28.5	342	323
1990 003A	CUSMUS 2055	20426	USSR	17 JAN	89.6	62.8	280	251
9500 0661		20427	USSR	17 JAN	89.5	62.8	273	250
	CUSMUS 2055	20428	USSR	17 JAN	4.68	62.8	131	112
		20429	USSR	17 JAN	89.4	62.7	2159	2128
		20463	USSR		88.6	62.8	2187	2131
		20464	USSR	17 JAN	88.5	62.8	2107	2072
		20449	NAGAL	24 JAN	88.2	30.7	204	0 60
1950 0098		20458	USSR	25 JAN	89.5	62.8	or o	100
		20487	USSR	6 FEB	100.3	65.8	1371	178
		20493	USSR	6 FEB	103.8	65.8	1694	194
		20495	บรรล		87.5	51.5	353	347
0010 0661		20300	บรรล		85.2	51.6	325	320
7010 0661		20501	USSR	15 FEB	87.1	51.6	305	295
		20524	1150	14 MAR	89.1	28.6	295	163
1990 0228		20526	USSR	14 MAR	89.3	64.9	693	420
		20530	NSS 4	22 MAR	86.3	82.3	127	80

	n	1990 0125	1990 012F			90 0	و ۾	os (10 V	L C		1080 1000	1 0						86	86			1986 017CE	1986 017CA						1 383 044CN					81 0	1981 028AV	1979 017LG		ο.	0 (1970 08940		5 C) (0	D 0		DESIGNATION	INTER
							COSMOS 2057																																					,	NEC SERVICE				ZAME	
20490	20486	20485	20484	20483	20482	20481	20457	20468	20467	20408	20398	20397	19152	16789	19307	1969	18674	18306	18176	1790	17553	17305	20460	20419	20418	20416	20415	16264	17744	17099	13294	14400	1 U U U U U U U U U U U U U U U U U U U	1 3 6 1	13690	13443	18464	16087	10628	7945	5033	5031	6330	4467	3 3 6 7	7,925	10000	•	NUMBER	CATALOG
USSR	USSR	USSR	CUSE	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	USSR	S	m S A	m i	F1 ()	η r Λ 4	n n n u > ≥	n n	η (τ γ > >	C V V X	USSR	USSR	USSR	USSR	USSR	USSR	USSR	US	USGR	CSSR:	USSB USSB	Coux		S	: CS	SO	US	USSR	USSR	USSR	SU	USSR	115	11660		SOURCE	
6 FEB	0 100	יסי מחור טיט	ה ה ה ה	א ס ק זיי	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 FEB	J	7	7	7	7	7	0	0	2	N	N	2	O I	v	u i	o v	υĸ) C	y C	19 FEB	vo	9 007	7 MAY	7 MAY	NUL 6	NO A	A JUN	A COL	P (> <	•	•	4	ú		Cui	Q1	0	7	UT (9) O	LAUNCH	
×	3	3	K 3	ב גם	3 X	O MAR	MAR	N A D	1 MAR	OMAR	8 MAR	12 MAR 90	9 MAR	MAR	9 MAR	I A R	6 MAR	1 NAR	I .	7 MAR	N N	7 MAR		5 1 5 2 7 7		ž	S NA	MAR	2 MAR	28 MAR 90	2 MAR	4 MAR	6 MAR	1 MAR		2 3 2 3 2 4 3 7			MAR	3 MAR	MAR	X A D	N A R	MAR	N A R	I A	Z .	K A	DECAY	

Part 1971 Commence (1979)

38JECTS DECAMED WITHIN THE REPORTING PERIOD

NOTES	
DECAY	5 MAR 90 2 MAR 90 28 MAR 90 15 MAR 90 23 MAR 90
LAUNCH	6 FEB 28 FEB 28 FEB 14 MAR 14 MAR NAR
SOURCE	USSR USSR USSR 11SQ USSR USSR
CATALOG NUMBER	20492 20519 20514 20524 20526 20530
Z A M E	
	515-36
INTER- NATIONAL DESIGNATION	1990 012L 1990 019A 1990 020B 1990 021B 1990 022B

13¢	11 0	10*	8 7 6 # # #	υ Δ \$	E \$	N ₩ ₩ ₩
P-THE-YEAR SUMMARY SI-AUNCHED WITH 1970 08'-GUND IN THE DECAYED SUMMARY SATELLITE SITH	ICTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY STREET IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY STREET IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY STREET IN THE DECAMPED AS HAVING BEEN LAUNCHED DOBZE, 1969 082C, 19	OF THIS SERIES HAI HAVE LIST IN THE DECEMBER 31 E PORT. D SPACECRAFT WHICH SUCCESS NOCENTRIC ORBIT. ECTS HAVE BEEN IDENTIFIED	DISCOVERED IN ORBIT WHICH HAS NOT BEEN IDDR COUNTRY OF ORIGIN. ECTS HAVE BEEN IDENTIFIED AS HAVING BEEN IN THIS SERIES THAT HAVE DECAYED CAN BE LIST IN THE DECEMBER 31 END-OF-THE-YEAR ON REPORT. ECTS HAVE BEEN IDENTIFIED AS HAVING BEEN DECTS HAVE BEEN IDENTIFIED AS HAVING BEEN	ECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LACCHED WE IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN SIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SION REPORT. SOF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN SOLIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SEPORT.	S SERIES THAT IN THE DECEMBE BEEN LAUNCHEE O CAN BE FOUNG E-YEAR SUMMAR)	AUNCHED WITH THE DECE

AS HAVING BEEN L DECAYED CAN BE END-OF-THE-YEAR AS HAVING BEEN DECAYED CAN BE END-OF-THE-YEAR AS HAVING BEEN DECAYED CAN BE END-OF-THE-YEAR	SERIES THAT HAVE DECEMBER 31 END- E BEEN IDENTIFIED AS 1974 099C. 0BJECTS 0 DECAYED 0BJECTS LIST E SITUATION REPORT. E BEEN IDENTIFIED AS SERIES THAT HAVE DEC	70 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 0674. 0BJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 10BJECTS LIST IN THE OECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA- 1159 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 0774. 0BJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA- 110N REPORT. 14 OBJECT HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 1054. 16 OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 1909JECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 110N REPORT.	BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 120A. SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA- BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1976 126A. SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA-	172 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1977 C654. 0BJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 0BJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA- 11ON REPORT. 70 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1977 121A. 11E OBJECT OF THIS SERIES THAT HAS DECAYED CAN BE FOUND IN THE DECAYED 11ON REPORT.
46 OBJECTS HAVE BEEN I OBJECTS OF THIS SERIES OBJECTS LIST IN THE DETION REPORT. 115 OBJECTS HAVE BEEN OBJECTS OF THIS SERIES OBJECTS IN THE DETION REPORT. 227 OBJECTS HAVE BEEN OBJECTS LIST IN THE DETION REPORT.	OBJECTS OF THIS SERIES THE OBJECTS LIST IN THE DECEME TION REPORT. 148 OBJECTS HAVE BEEN IDEN 1974 OBS98, AND 1974 OBS96, BE FOUND IN THE DECAYED OBSUMMARY SATELLITE SITUATION OBJECTS HAVE BEEN IDEN OBJECTS LIST IN THE DECEMBION REPORT.	யின்	51 03JECTS HAVE BEEN ID OBJECTS OF THIS SERIES OBJECTS LIST IN THE DECTION REPORT. 78.0BJECTS HAVE BEEN ID 08JECTS OF THIS SERIES OBJECTS LIST IN THE DECTION REPORT.	CTS HAVE BEEN I OF THIS SERIES LIST IN THE DECI ORT. IS HAVE BEEN IDI CT OF THIS SERIE LEST IN THE DECI
15¢ 46 0BJECTS H 0BJECTS OF TI 0BJECTS LIST 110 REPORT. 115 0BJECTS OF TH 0BJECTS OF TH 110N REPORT. 17¢ 227 0BJECTS OF TH 0BJECTS OF TH 0BJECTS OF TH 17¢ 227 0BJECTS IST 110N REPORT. 198 0BJECTS H				26¢ 172 08JECTS 1 08JECTS OF TI 08JECTS LIST 1ION REPORT. 70 08JECTS HI THE 08JECT OF 08JECTS LIST 1ION REPORT.

SITUATION REPORT. 46 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1984 083A. 66 OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 68 OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE 68 SITUATION REPORT.	410
TION REPORT. 30 OBJECTS HAVE BEEN OBJECTS IN THIS SER	4 0%
TION REI	39*
ON REPORT. CTS HAVE BEEN OF THIS SERI	3 9 ₩
BEEN IDENTIFIED SERIES THAT HAVE	37≎
TION REPORT. DEPLOYED FROM SPACE TRANSPORTATION VEHICLE. 33 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1982 115A. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUNDARY SATELLITE SITUA-	35∻ 36∻
TION REPORT. 305 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1981 053A OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA-	34%
	3 3≎
	32�
	31#
SUMMARY SATELLITE SITUATION REPORT. 288 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1979 017A. OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS I THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUA-	30≎
THE DECAYED COJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR FOUND IN THE DECAYED OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR	29#
	28 €

FOOTNOTES (CONT)

BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1985 082A. SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1985 030A. SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE	BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 024A. SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE " BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 019A.	FOUND IN THE DECAYE SUMMARY SATELLITE AUNCHED WITH 1986 0 FOUND IN THE DECAYE SUMMARY SATELLITE	81 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1986 017A. 08JECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED 08JECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE SITUATION REPORT. 195 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1987 004A. 08JECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED	AS HAVING BEEN DECAYED CAN BE :NO-OF-THE-YEAR	OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1988 065A. JECTS IN THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED JECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SUMMARY SATELLITE NATIONAL NAME
24 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LOBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SIDALION REPORT. 25 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LOBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT.	30 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LOBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT.	OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT. 30 DBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LOBBECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT.	81 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN I OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT. 195 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN OBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE OBJECTS IN THE DECEMBER 31 END-OF-THE-YEAR	JICALION REPORT. 108 OBJECTS HAVE BEEN IDENTIFIED 08JECTS IN THIS SERIES THAT HAVE 08JECTS LIST IN THE DECEMBER 31 E	18 OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LOBJECTS IN THIS SERIES THAT HAVE DECAYED CAN BE 09JECTS LIST IN THE DECEMBER 31 END-OF-THE-YEAR SITUATION REPORT.
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